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POLICY ISSUES: COORDINATION AND COOPERATION WITHIN AND OUTSIDE THE UNITED NATIONS, INCLUDING NON-GOVERNMENTAL ORGANIZATIONS

Draft system-wide strategy in the field of the environment

Note by the Executive Director

The Executive Director has the honour to circulate herewith, for the information of participants in the nineteenth session of the Governing Council, the draft system-wide strategy in the field of the environment. The background to the preparation and structure of the document is set out in the Executive Director's note on the subject, which is also before the Council at its nineteenth session (UNEP/GC.19/19). The text is reproduced as it was received by the Governing Council secretariat and has not been formally edited.

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CHAPTER I:

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1. FRESHWATER, COASTAL AND MARINE RESOURCES

INTEGRATED MANAGEMENT OF FRESHWATER, COASTAL AND MARINE RESOURCES

1. Introduction

Without increased efforts to protect and restore the world's water resources, their quality and quantity, one-third of the world's population will suffer from chronic shortages of freshwater by the year 2025. This is due to increasing demands caused by growing populations, intensification of urbanization, and associated water requirements such as for expanding industries, agriculture and other economic activities. Millions of people are expected to die from waterborne diseases. Both problems are further exacerbated by decreasing water quality resulting from human misuse and pollution of inland water resources as well as its quantity in specific areas due to climatic variations. The increasing water scarcity, combined with its deteriorating quality, will have far-reaching global impacts and may even cause international conflicts over water rights.

These considerations are of special concern for groundwater. It amounts to 97% of the planet's freshwater, excluding polar ice caps, and in excess of 1.5 billion people depend on it for their drinking water supply. Groundwater is being abstracted by unsustainable rates in many areas, and groundwater pollution is a matter of growing concern. Regarding the quality of groundwater after degradation is a difficult, expensive and slow process, and preventive actions are urgently needed.

Equally serious is the situation regarding the quality and economic use of coastal and marine waters, their ecosystems and living resources, including physical destruction of coastal habitats caused by land-based human activities. Coastal ecosystems are in serious decline in many places, especially those near shallow shelves and dense population. The ecosystems, which are both capable and essential to support of coastal communities worldwide, have also great economic, social and cultural importance to nations and to entire regions. Some of the activities have a negative impact on both the global atmosphere and oceans. Caring for natural resources and promoting their sustainable use is an essential response of the world community to ensure its own survival and well-being.

The costs of unsustainable water use can be enormous. The significant environmental, economic and social costs should much more be taken into account in designing and implementing water projects and programmes.The economic costs of unsustainable water use vary. Typical costs include lost of production and under-utilized investment, when the decreasing availability of water forces cutbacks in economic activities requiring substantial water resources. As an example, the environmentally unsustainable use of freshwater resources for agricultural irrigation in the Aral Sea drainage basin decreased lake water level and quality to such an extent that the previously robust fishing industry completely collapsed. Nearly all investment in this and related industries now lies idle. The inefficient use of irrigation water in semi-arid regions has lead to salinization and subsequent decrease in agriculture production. The benefits of food security and improved nutritional status resulting from irrigation development are all too often reduced by the adverse human health impacts resulting from inadequate planning and management of the hydraulic system.

The freshwater hydrological cycles are inseparably linked with marine systems. Thus, problems besetting river basins have a profound impact on the coastal and marine environment. Pollution from land-based activities, such as those originating from big cities, industries and agriculture, and increasing tourism, is currently the most imminent problem affecting the aquatic biological resources and biodiversity. Coastal ecosystems, particularly those of small island developing States, are at special risk. To control the negative changes and focus on action to improve the situation, integrated management of river basins and coastal areas is essential. The health and well-being of communities living in river basins must be a critical consideration in any such an integrated approach. There is a need for strengthening internationally coordinated action to alleviate common global problems assailing water resources.

The integrated approach should be also applied in expanding areas covered by regional seas conventions nd action plans to river basins draining to them, redesigning of action plans and legally binding instruments with focus on integrated management of river basins, coastal zones and marine areas. There is a need to assure

that integrated management of watersheds, lakes and coastal areas is based on scientifically sound, realistic and policy-relevant assessments. For this, strengthening of international cooperation is of utmost importance. The UN system, in dealing with those problems, established a number of coordinating mechanisms including the ACC Subcommittee on Oceans and Coastal Areas and Subcommittee on Water Resources in order to provide an integrated response.

2. Objectives

- Improving integrated and environmentally sound management of groundwater, rivers, lakes, estuaries, marine and coastal areas, and related freshwater resources.
- Promoting the environmentally sustainable use of freshwater, coastal and marine resources.
- Maintaining the biological diversity and health of freshwater, coastal and marine ecosystems, including strengthening of the existing infrastructure of marine national parks.
- Protecting the marine and associated freshwater environment through the implementation of the provisions of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities on national, sub-regional, regional and global levels.
- Protecting the coral reefs through the implementation of the International Coral Reef Initiative.
- Protecting the biological diversity of freshwater systems and the seas through, inter alia, implementation of such programmes as the Global Plan of Action for Marine Mammals, or monitoring the impact of disappearance of great whales to the marine ecosystem.
- Strengthening of action related to major global environmental changes, e.g. impact of stratospheric ozone depletion and greenhouse gases on freshwater and ocean ecosystems and sea level rise.

The Task Managers, under IACSD for the relevant chapters of Agenda 21 are:
- Chapter 17: "Protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources" - **ACC Subcommittee on Oceans and Coastal Areas**; and
- Chapter 18: "Protection of the quality and supply of freshwater resources: application of integrated approaches to the development, management and use of water resources" - **ACC Subcommittee on Water**.

3. Major programmatic thrusts

3.1 Assessments

- Undertake policy-relevant assessments for environmentally-sustainable management and use of freshwater and coastal resources, including global and regional freshwater assessments. Continue and enhance relevant monitoring programmes on global, regional and national level with special emphasis placed on quality of collected data and information;
- Assess at the regional level the impact of land-based activities on coastal and marine waters as well as on the groundwaters, lakes and riverbasins which flow into them;
- Assess the quality of open oceans and coastal waters in all seas aiming at the preparation of a comprehensive global assessment by 2002;

- Gather relevant information on pollution load, direct and indirect discharges and on other land-based activities' impact on freshwater rivers and lakes and on regional seas, including pollution cause-effect relations in terms of water issues related to mega-cities;

- Assess the amount and effects of persistent organic pollutants (POPs) and other hazardous and toxic substances in water environment (water, biota and sediments);

- Report on the quality and quantity of living biological resources in relevant water bodies;

- Assess appropriate technologies in regard to water issues, and assessment of policy instruments and institutional and financial arrangements for water management.

- Assess international and national water policies in terms of economic viability, environmental sustainability and equiti implications.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, UNEP, UNESCO/IOC, UNDP, UNU, WHO, WMO, World Bank, UN Regional Commissions; GESAMP, IUCN, regional organizations and Regional Development Banks, international and national centers of excellence and laboratories; NGOs.

3.2 Policy

- Promote drinking water supply, particularly for arid and semi-arid regions, and regions experiencing water shortages due to pollution and misuse of water resources, in the context of national sustainable development strategies. The special attention will be placed to the issues of groundwater. Promote pollution control including appropriate sanitation to protect resources, protect health and support reuse particularly in arid/semi-arid regions and areas experiencing water shortages.

- Strengthen the existing Conventions and Protocols and Programmes (including the UN Convention on the Law of the Sea, Global Programme of Action on the Protection of the Marine Environment from Land-based Activities and Regional Seas Conventions and Protocols) and facilitating consensus on the establishment of new legally-binding instruments, where appropriate, including an instrument on Persistent Organic Pollutants, new Regional Seas Conventions and Protocols and international riverbasin agreements as well as strengthen legal framework for sustainable use and conservation of living aquatic resources;

- Promote interagency cooperative arrangements for the protection and restoration of coastal waters and associated riverbasins, as well as open oceans, with the focus on the living resources.

- Enhance the use of existing regional structures (e.g. international riverbasin agreements and regional seas programmes) and mechanisms to implement environmentally sustainable management practices.

- Support prioritization of water-related activities and projects in the national development strategies, giving particular attention to the corrective actions and availability of financial resources.

- Promote compliance with international conservation and management measures by fishing vessels on the high seas and elaborate the Code of Conduct for Responsible Fisheries and its guidelines that provide the basis for management and conservation of fishery resources.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, ILO, IMO, UNEP, UNDP, UNIDO, UNESCO/IOC, UN Office for Legal Affairs, WHO, WMO, World Bank, UN Regional Commissions; OECD.

3.3 Management

- Build capacity at national level to address critically-needed water-related remedial programmes and other activities;
- Assist Governments in development and application of comprehensive management plans and programmes, in the area of freshwater, coastal and marine waters;
- Implement pilot projects, to demonstrate the use of relevant technologies and methodologies, and build capacity for integrated freshwater and zone coastal management;
- Promote the use of appropriate technologies for the restoration of the most degraded water systems.
- Strengthen national policies aimed at including health in water resources development planning and management.
- Promote national capabilities to undertake policy relevant assessments for environmentally sustainable management and use of freshwater and coastal resources.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, UNDP, UNEP, UNESCO/IOC, WHO, World Bank, UN Regional Commissions; Regional Development Banks, Regional Seas Secretariats, river basin authorities.

4. Emerging issues

Considering the growing problem of marine pollution due to persistent organic and other pollutants Governments have expressed the need for a rapid conclusion of a legally binding instrument aiming at regulating the production and use of those substances. The need to immediately substitute some of those substances with environmentally harmless and economically compatible ones, while taking into consideration economic and health concerns of developing countries is priority area for future efforts.

Similarly there is a need to place a considerable effort to resolve the problem of waste water and solid waste in order to reduce pollution of freshwater and coastal waters, affecting health and welfare of the populations, particularly in developing countries. The development of innovative technologies as well as a widespread use of legal and socio-economic instruments in the management of sewage from urban areas will also have to be addressed. Similarly, water-related vector-borne diseases (malaria, dengue, Japanese encephalitis) continue to take a heavy toll and the promotion of environmental management for their control as part of water resources development equally requires a strengthening and re-direction of inter-agency collaboration.

The continuing problem is that of inadequate supplies of safe drinking water and lack of appropriate sanitation. Given that waterborne disease remains the greatest single cause of sickness and death on a global scale, the issue requires greater commitment on the part of the governments, UN agencies and relevant funding agencies.

There is also a growing need for finding appropriate governance mechanisms for sharing and sustainable utilization of shared-water bodies and resources in order to avoid potential conflicts.

2. LAND RESOURCES

(a) SUSTAINABLE FOREST MANAGEMENT

1. Introduction

Forests play a major part in the global carbon cycle, and hence influence climatic change. They are also important in the hydrological cycle. They are the home of about half of all the species that live on Earth, and are hence vital reservoirs of biodiversity. They provide an array of social benefits to those who live both in and outside the forest. They contain many species of great value as biological resources, and some whose value we can only guess at because they have yet to be characterized by science. They yield products - both wood and non-wood- that are important in trade both locally and internationally. They are immense assets to many countries. At the same time, many forests have not been used sustainably, that clearance has swept away undiscovered biological wealth, and that pressures in many regions continue to mount.

The debate on forests initiated prior to and during UNCED resulted in two products dedicated to forests and adopted at the conference, namely Chapter 11 "Combatting Deforestation" of Agenda 21 and the "Non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests".

The international deliberations on forests continued with increased intensity after the Earth Summit. The recognition of a growing need to establish an intergovernmental forum to focus on priority issues related to forests led to the convening at the third session of the Commission on Sustainable Development held in 1995 of the "Open-ended ad hoc Intergovernmental Panel on Forests" (IPF) under the aegis of the Commission. The Panel overtook the majority of issues related to forest in their global political dimension.

2. Objectives

- Broadening of the international consensus for the application of Agenda's 21 "Forest Principle" as adopted at UNCED.

- Broadening of National Forest Policies to incorporate increased emphasis on sustainable and multiple end use forest management and on environmental concerns such as conservation of biodiversity, climate change and land degradation.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 11: "Combating deforestation" - **FAO**.

3. Major Programmatic Thrusts

System-wide programme activities to achieve Sustainable Forest Management (SFM) are under discussion at the Intergovernmental Panel on Forest (IPF). IPF will look at policy options at the national, regional and global levels. Cross cutting forest related environmental issues of global concern will be the focus of the system-wide programme.

3.1. Assessment

The demand for regional and global level forest resource assessments has gained momentum during the last decade or so. The primary use of such information is in the formulation of regional and global policies and agreements. Continuing demand for such information is driven by the need to establish the baseline data set and develop models for resource monitoring.

- Complete the Global Forest Resources Assessment 2000 (FRA 2000) which is to provide the international community with an objective evaluation of the situation and trends of the world's forests and other wooded lands by the year 2000.

- Develop and promote criteria and indicators for Sustainable Forest Management (SFM).

- Develop improved methodologies for assessing changes in forest biomass.

- Monitor commitments made by national governments under emerging Regional Forest Agreements and under Climate Change, Biodiversity and Desertification Conventions that relate to Sustainable Forest Management of forest ecosystems.

- Monitor the degree of compliance of Member States with the provision of legally binding and voluntary agreements related to forest.

Involved agencies and organizations in the above programmatic thrust include: **ECE, FAO, UNEP, UNU; IGBP, IUFRO, NASA, WCMC and WRI.**

3.2. Policy

The over riding policy objective is to promote a global consensus on the management, conservation and sustainable development of all types of forests.

- Develop awareness of the importance of more systematic action by national governments to create effective institutional mechanisms for ensuring that forests conservation concerns are factored into the policies and development strategies of other key productive sectors and facilitate integrated policy dialogue between national government forestry and other government sectoral and environmental agencies.

- Implement UNCED decisions related to forests at the national, regional and international level including an examination of sectoral and cross-sectoral linkages.

- Strengthen the Forest Principle and possibly facilitate a process of looking into a legally binding instrument on forests.

- Harmonize criteria and indicators for the various regional forest agreements that have been or are being developed since UNCED.

- Support conflict resolution oriented solutions for issues concerning forest product trade (including restrictive tariffs) and ecolabelling.

Involved agencies and organizations in the above programmatic thrust include: FAO, ILO, UNDP, UNEP, World Bank; WTO, Regional Development Banks, Secretariat of CBD, ITTO.

3.3 Management

- Support Forest Related Environmental Information Assessment and Dissemination Programmes.

- Support capacity-building programmes aimed at more comprehensive forest related environmental education and training.

- Support ongoing research in the areas of ecologically sound forest conservation and management practices and technology transfer.

- Facilitate integration and harmonization of National Forest Programmes (NFPs) into national plans.

- Encourage governments to involve all stakeholder in forest planning and management, in particular indigenous and local populations.

- Enhance the scope and effectiveness of policies and activities related to management, conservation and sustainable development of forests undertaken by national governments.

- **Address critical issues related to sustainable forest management such as land and tree tenure, assessment and scientific knowledge for valuing multiple benefits of forests.**

- **Establish donor activities coordinating mechanism at the national level to enhance effectiveness of donor support in addressing forest issues.**

- **Encourage social forestry at the community level.**

- **Prepare practical manuals for sustainable management of moist tropical forests.**

Involved agencies and organizations in the above programmatic thrust include: FAO, ILO, UNDP, UNEP, WRI.

4. Emerging Issues

Deforestation during 1981 to 1990 is observed to be 15.4 million ha. annually at a global level (annual rate of change - 0.9%). Despite the commitment taken at UNCED as provided in Agenda 21 "Forest Principles" deforestation continues. Lack of a comprehensive strategy to manage forest resources will lead to further loss of biodiversity as well as global warming and desertification.

Of mounting global concern is the issue of likely impact of global climate change on forest and all that this may imply for human welfare, trade and the global environment. Major uncertainties prevail about the impact of global warming on increased rates of respiration, which in turn may speed the release of carbon dioxide and methane from biotically controlled plant add organic matter land masses.

A relatively small number of countries or forested regions account for an inordinately high proportions of the earth's biological resources. Only 15 such areas that occupy about 4% of the land surface of the planet, harbour at least 30-40% of all terrestrial biodiversity and a much higher percentage of species at greatest risk. However to date there has emerged no cohesive action programme focussed on those areas that are often experiencing the heaviest shifting cultivation pressures.

Considering the growing problems of how to attain sustainable forest management, some governments express the need for a legally binding instrument on forest.

(b) Dryland Degradation Control

1. Introduction

The degradation of land resources endangers basic production systems as well as natural ecosystems. Dryland degradation is an urgent environmental problem, global in scope, placing some one billion people in 110 countries at risk, mainly in developing regions. The drylands comprise an estimated one-third of the earth's surface, of which three-fourths have suffered some degree of land degradation. Land degradation also occurs in the more humid climatic zones. The causes of land degradation are complex; they include: the impacts of drought and flooding; overgrazing of rangelands, unsustainable agricultural practices, deforestation, and urban expansion policies; population and poverty pressures; unfavourable land-tenure rights; under-valuation of land resources and pricing failures; and numerous other social and economic processes.

Land degradation is a major cause of poverty in dry areas. It is the main reason for the steady decline in rural income resulting in a complex demographic, economic and social changes. The process affects all those who depend on the land as a basic resource, whether for crops, livestock or fuelwood. The link between land degradation and poverty is direct and intimate.

In chapters 10, 12, 14 and 38 of Agenda 21, key areas of focus include assessment and evaluation; the collection and dissemination of information; policy areas and emerging issues such as migration; promoting innovative and people-oriented approaches and examining the problems of the "bottom-up" approach in practice to alleviate poverty and sustainable food security in rural areas.

Chapter 12 of Agenda 21 specifically recommended protecting lands that are not degraded or only slightly degraded and sustaining their productivity as a first priority in combating desertification. The second priority was applying corrective measures and sustaining the productivity of drylands that are only moderately degraded at present. The rehabilitation of severely and very severely degraded drylands and their return to productive use is considered a third priority action within the total anti-desertification campaign. At the same time, it is recognized that establishing priorities should always be site-specific and should be decided by the authorities concerned, depending on the actual situation in the particular countries and localities.

Ad hoc efforts to control land degradation have had limited success to date. Well planned, more integrated long-term national and regional land conservation and rehabilitation programmes, with strong political support and adequate funding, are needed to solve the land degradation crisis in the dry regions.

2. Objectives

The objectives of the system-wide strategy in the area of dryland degradation and desertification control are:

- Enhancing knowledge on the causes, extent and consequences of drylands degradation at national, regional and global levels including its biophysical, social and economic dimensions;
- Raising the awareness of Governments, local authorities and the public at large concerning the magnitude and the threats of dryland degradation and desertification issues at local, national, regional and global levels;
- Promoting action in support of the UN Convention to Combat Desertification (CCD), and strengthening national capabilities to safeguard and protect land resources, and increasing people-oriented approaches to sustainable land use;
- Maintaining and improving access to the dryland information systems, and ensure that existing databases are kept up-to-date.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 12: "Managing fragile ecosystems: combating desertification and drought" - **UNEP**.

3. Major programmatic thrusts

The major programmatic thrust is to solicit system-wide collaborative activities to implement Agenda 21 Chapters 10, 12 & 14, and the Convention to Combat Desertification. These will be undertaken within four programme components; namely: i) Monitoring and assessment; ii) awareness raising; iii) promoting action; and iv) social dimensions and sustainable practices. Main strategies will be:

- Improving policy-relevant assessment of drylands degradation.
- Strengthening international policy support to the development of national, sub-regional and regional action programmes.
- Increasing people-oriented approaches to sustainable land use and natural resources management.

3.1 Assessment

The outputs of the assessment activities are direct inputs into awareness building and promoting action components of the UN system actions in the area of land degradation control and in particular of UNEP's Land Programme. Furthermore, integrated database compilation on land resources contributes to studies such as food security, fresh water resources, climate change etc. Comparably, work on land use and land cover is of direct use to work on freshwater, biodiversity, agricultural, forests, urban issues. It is also important to assess the current status of the social dimensions in the drylands and their links to the observed land degradation processes, including the associated grassroots indicators as well as to identify existing and emerging land-use practices that are successful in improving the livelihoods of the drylands populations sustainably both socio-economically and through better use of the biophysical environment. Promoting the replication of techniques and innovations and the approaches that are associated with the successes are also of particular value. The system-wide activities should:

- Establish mechanisms and methodologies to enhance knowledge about land resources: their status, trends, cause-impact linkages and possible responses for combatting degradation processes;
- Enhance knowledge on linking combating land degradation with global change, conserving biodiversity, food production, poverty alleviation etc;
- Compile data and transfer knowledge on soils, terrain, land cover and land quality databases for sustainable planning and management of land resources.
- Assess the population dynamics and socio-economic links with dryland degradation, with emphasis on policy, and integrate the human dimensions to that on related biophysical aspects;
- Identify indicators (land quality indicators - LQI) and criteria, both social and technical, of approaches that lead to sustainable land management;
- Increase awareness on successful techniques, innovations and approaches in the prevention and combating of land degradation in dryland ecosystems.
- Establish a Global Terrestrial Observing system (GTOS) to provide data management.
- Strengthen land use information and evaluation including gender responsive advisory materials and strategies for land conservation and rehabilitation.
- Undertake study to further assess the contribution of drylands into national economy as a basis for allocation of resources and investments policies decided by policy-makers.

Involved agencies and organizations in the above programmatic thrust include: CSD, FAO, IAEA, IFAD, UNDP/UNSO, UNEP, UNRISD, UNU, WMO, World Bank, GEF.

3.2 Policy

A major global awareness raising campaign on the drylands with a view to changing the generally negative perception occasioned by reports and media coverage of famines and refugees is needed. It is therefore imperative to focus on acquiring, providing and disseminating information on desertification and the drylands, in appropriate formats to those who need it. The system-wide response should be implemented in cooperation with governments, subregional organizations, NGOs and CBOs and will:

- **Develop, implement and coordinate a comprehensive global awareness-raising programme on land degradation and desertification and its possible solutions;**
- **Build consensus among major partner/agencies regarding methodologies for assessment and monitoring of desertification which is reliable and cost effective and would serve as a guide for policy setting.**
- Support the CCD through the use of awareness-raising materials to broker partnerships and mobilize resources;
- Increase capacity of countries in the regions on desertification control through training activities;
- Promote regional and international co-operation in anti-desertification activities through the exchange of information, experience, research and training.
- Strengthen international structures and increase the involvement and participation of stakeholders.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, UNDP/UNSO, UNEP, UNESCO, WMO, GEF.

3.3 Management:

Management systems should be able to assist countries and organizations at global, regional, sub-regional, national and sub-national levels to implement Chapters 10, 12, and 14 of Agenda 21 and the Convention to Combat Desertification. The strategy will promote the development of options, priorities and tools to address the issue of combating desertification and development of action plans. It will focus more specifically to:

- **Enhance global, regional, sub-regional and national cooperation on dryland development and desertification control;**
- **Develop and implement international consensus building strategies and national, sub-regional and regional action programmes, as required by the Convention to Combat Desertification;**
- **Assist countries and organizations to review and formulate conceptual frameworks and develop policies for the integrated management and conservation of dryland ecosystems.**
- **Promote implementation of programmes using improved methodologies and techniques that lead to sustainable land use and natural resource management.**
- **Promote increased collaboration in, and where possible, full integration of Integrated Pest Management (IPM) Programmes and disease Vector Control Programmes.**

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, IFAD, UNDP/UNSO, UNEP, UNRISD, WMO, World Bank, GEF.

4. Emerging issues

A continuing priority is awareness raising on the significance of the desertification issue in both affected countries and in the rest of the world, based on scientifically sound indicators. Partly because the assessment methodologies are still not adequate, there is limited recognition that land degradation in the drylands alone, places the livelihoods of one sixth of the worlds population at risk.

Among the emerging priorities is a long-standing one that is still being inadequately addressed. The issue of building capacity for implementation in the affected countries is fundamental to successful implementation. This issue is so complex and difficult to tackle that, despite ongoing and increased recent efforts, there is a great deal more still to be done.

One of the fundamental issues remaining is the better determination of the nature, extent and socio-economic impact and costs of desertification. This requires agreement on appropriate indicators of land quality, condition and socio-economic conditions by which changes can be assessed. There is now a concerted effort being made among most interested agencies, in coordination with the work of the CSD on indicators of sustainable development, to establish agreed land quality indicators as soon as possible.

3. ATMOSPHERE

(a) PROTECTION OF THE STRATOSPHERIC OZONE LAYER

1. Introduction

The ozone layer, a fragile shield of gas which protects the Earth by absorbing hazardous radiation from the sun (namely, UV-B and UV-C radiation) is being damaged by anthropogenic chemicals released on Earth. The main dangers from the weakening of this shield is that it could lead to a rising intensity on the ground of the harmful solar UV-B radiation. This in turn could lead to increased rates of skin cancer and eye cataracts; to the weakening of the immune system; including damage to ecosystems and agriculture; damage to materials; damage to marine organisms, and to the possible disappearance of phytoplankton which form the base of the marine food chain.

The main chemicals damaging the ozone layer are the Chlrofluorocarbons (CFCs), (a group of substances used in refrigeration, aerosols, in producing insulation materials, and as cleaners in many industries); the Halons (a group of substances used in fire extinguishers), methyl bromide (a substance used mainly for soil fumigation in agriculture and foodstuff fumigation in storage), and two industrial solvents (carbon tetrachloride and methyl chloroform).

The first major statement of scientific concern over ozone depletion from CFCs came in 1974, following Sherwood Rowland and Mario Molina's research, which paved the way to the now thorough understanding of the process by which the CFCs and other ozone depleting substances (ODSs) diffuse up to the stratosphere, are broken apart and destroy ozone molecules.

UN has been concerned with the protection of the ozone layer since its foundation by the UN Conference on the Human Environment in Stockholm in 1972. At that time, though, the main threat to the ozone layer was thought to be caused, by high-flying supersonic aircraft exhausts. In 1977 UNEP convened a meeting of experts on the ozone layer and coordinated, in the following years, a series of international assessments on the ozone layer and the effects of its depletion. In 1981, UNEP's Governing Council established an ad-hoc working group of legal and technical experts to negotiate a Global Framework Convention for the Protection of the Ozone Layer, in the form of an international treaty. As a result, the Vienna Convention for the Protection of the Ozone Layer was agreed upon by 28 countries in March 1985.

The Vienna Convention promotes research and systemaic observations, sharing information on ODS production and emissions, and the development of protocols which will address specific issues related to the Convention. Thus, in the Vienna Convention, States agreed, although only in principle, to tackle this global environmental problem even before its effects were felt or its existence was proven scientifically. The Vienna Convention is probably the first example of the acceptance of the "precautionary principle" in any major international negotiation.

On the 16th of September, 1987, 46 nations signed the Montreal Protocol on Substances that Deplete the Ozone Layer. The Montreal Protocol required its Parties to cut 50% of their 1986 levels in both production and consumption of the five main CFCs by 1999, with interim reductions. Production and consumption of the three main halons was frozen as of 1993 at 1986 levels.

An important feature of the Montreal Protocol is its flexibility which allows for its further development in light of evolving scientific knowledge and technological development. The Protocol has now been subject to three sets of adjustments of the control measures (agreed at the 1990, 1992 and 1995 Meetings of the Parties), accelerating the phase-out schedules for ODS. It has also been subject to two amendments: The London Amendment (1990) added methyl chloroform, carbon tetrachloride and a further range of CFCs to the phase-out schedules. It also established a mechanism for providing financial and technical assistance to developing country parties and created the Multilateral Fund as the route for financial transfers to developing countries. The Copenhagen Amendment (1992) added two groups of substances Hydrochlorofluorocarbons (HCFCs), and Hydrobromofluorocarbons (HBFCs) and methyl bromide to the phase-out schedules.

In accordance with the Montreal Protocol and its subsequent Amendments, the bulk of ODS were phased out completely (except for limited essential uses) in industrialized countries by the end of 1995, while the remaining categories are scheduled for total phase-out by 2010 (methyl bromide) and 2030 (HCFCs).

A key feature of the Montreal Protocol is its treatment of developing countries. Article 5 of the Protocol permits a developing country with a consumption lower than a specified limit (called "Article 5 countries"), to delay for ten years, its compliance with the control measures set out in the Protocol "in order to meet its basic domestic needs." Article 5 countries are also entitled to financial assistance which covers the costs of their ODSs' phase-out. This funding is provided by the Multilateral Fund for the Implementation of the Montreal Protocol.

As a result, both production and consumption of ODSs had somewhat increased in developing countries, as expected and allowed by the Protocol. Nevertheless, because of the stringent control measures taken by the developed countries, overall world production of CFCs has declined by about 75% from the base year of 1986.

2. Objectives

The general objective of the ozone depletion programme, as expressed in the preambles of both the Vienna Convention and the Montreal Protocol, is to protect the global atmospheric ozone layer.

This objective has been recently defined in more specific and quantitative terms as restoration of the levels of the stratospheric ozone layer and the resulting solar ground level UV-B radiation to their pre-1970 values. These objectives are to be achieved by gradually discontinuing the use (i.e., by phasing out) of all the ozone depleting substances.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 9: "Protection of the atmosphere" - **UNEP & WMO.**

3. Major Programmatic Thrusts

3.1 Assessment

3.1.1 Assess changes that occur in the Stratospheric Ozone Layer and of the Impact of these Changes on Human Health and on the Environment, as required by the Vienna Convention:

- Monitor and assess the global total-column ozone concentration;
- Monitor and assess stratospheric ozone, chlorine and bromine concentrations;
- Monitor and assess total organic chlorine and bromine concentration in the lower atmosphere, which is the best measure of the potential for ozone depletion;
- Monitor and assess solar ground level UV-B radiation levels;
- Assess the impact of the changed UV-B radiation levels on human health, on plants and on the marine environment.

3.1.2 Assess the rate of ODS phase-out (in terms of kg ODS per year) and their replacement by alternative non-ODSs or by technologies that do not deplete the ozone layer, as required by the Montreal Protocol:

- Collect and/or disseminate relevant information on technologies, equipment and chemicals to replace ODSs.
- Evaluate information on actual ODS phase-out as reported by the Parties.

- Gather information on the use and possible phase-out of ODS in non-Party countries.

- Assess the economic costs of ODS phase-out and the instalment of alternative new technologies in developing countries and technology transfer.

- Monitor and analyze the progress of developing countries in meeting their national commitments under the Montreal Protocol, through the Regional Networks of ODS Officers, coordinated by UNEP-IE OzonAction Programme.

- Assess requirements for funds for the Multilateral Fund (UNEP-MF) for 1997-1999 period (3-year rolling business plan).

Involved agencies and organizations in the above programmatic thrust include: UNEP, WMO, UNDP, UNIDO, World Bank, WHO, GEF, as well as the Assessment Panels established within the Montreal Protocol: Scientific = SAP, Technical and Economic = TEAP, Environmental Effects = EEP.

3.2 Policy

- Promote interagency cooperative arrangements to provide the Parties with information required to establish phase-out targets for developing countries.

- Promote further the existing cooperative arrangements to carry out monitoring and assessment projects of ozone, chlorine and bromine concentrations and of UV-B radiation levels (between the Montreal Protocol SAP and TEAP, UNEP-MF, WMO, World Bank and GEF).

- Promote further the existing cooperative arrangements to identify suitable ODSs phase-out projects in developing countries, and to provide the necessary funding.

- Monitor and analyze the progress of developing countries in meeting their national commitments under the Montreal Protocol, through the Regional Networks of ODS Officers, coordinated by UNEP-IE OzonAction Programme.

- Assess requirements for funds for the Multilateral Fund (UNEP-MF) for 1997-1999 period (3-year rolling business plan).

Involved agencies and organizations in the above programmatic thrust include: UNDP, UNEP, UNIDO, WMO, World Bank, WHO, GEF, as well as the Assessment Panels established within the Montreal Protocol: Scientific = SAP, Technical and Economic = TEAP, Environmental Effects = EEP.

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- Promote further the existing cooperative arrangements to identify suitable ODS phase-out projects in developing countries, and provide the necessary funding.

- Support the on-going policy dialogue process between the developed and developing countries.

- Increase the efforts invested by the relevant UN agencies in the enforcement of ODSs phase-out using the combined and coordinated resources of all bodies involved.

Involved agencies and organizations in the above programmatic thrust include: GEF, UNDP, UNEP, UNEP-MF, UNIDO, WMO, World Bank.

3.3 Management

- Provide support and strengthen capacity building in developing countries for ODS phase-out.
- Promote and provide support to the decision-making process in developing countries for ODS phase-out.
- Assist governments with technical and economic information in installing alternative substances and technologies
- Develop and disseminate to developing countries materials on policy guidance.
- Implement projects to phase-out ODS in developing countries
- Monitor the phase-out of ODS both in developed and developing countries.

Involved agencies and organizations in the above programmatic thrust include: UNDP, UNEP, UNEP-MF, UNIDO, World Bank, GEF.

4. Emerging Issues

Much of the path leading to the global phase-out of ODS has already been paved in the last nine years since the Montreal Protocol was adopted. Nevertheless, there are new issues that have emerged recently and that have to be addressed:

- The need for effective and comprehensive monitoring of the ground level solar UV-B radiation levels. This issue was neglected in the past, consequently, no good data on ground level solar UV-B in the 1970s and 1980s are available anywhere.
- The impact that changes in UV-B radiation levels may have on human health is far from being fully understood, and much greater levels of cooperation and coordination will be required among UN agencies, especially UNEP and WHO. It should be emphasized that conclusions derived from this health assessment will be crucial to making the decision regarding the timetable on the ODS phase-out in developing countries.
- The relation between ozone depletion and climate change: Changes in ozone concentrations as a result of human activities are believed to have had a significant influence on radiative forcing, and therefore, on the global climate.
- Many of the substitutes developed to replace CFCs and halons are also greenhouse gases: These substitutes, although in compliance with the requirements of the Montreal Protocol, will have to be controlled under the United Nations Framework Convention on Climate Change. Cooperation and coordination between the Secretariats of the two Conventions is essential.
- The phase-out of methyl bromide and development of a suitable replacement: Closer cooperation and coordination between FAO and UNEP will be required to reduce the use of methyl bromide in the agricultural sector and to develop a suitable replacement.
- Natural phenomena, such as unusual weather or volcanic eruptions, might have a significant effect on the rate of restoration of the ozone layer. The recent eruption in 1992, of the Pinatubo Volcano and the resulting ozone loss, is a clear example as to how a natural phenomenon can strongly affect the ozone layer.
- Exhaust gases from high-flying aircraft were originally implicated, early in the 1970s, in the depletion of the ozone layer. Since then, this issue has not received much attention. The impact of high-flying aircraft exhaust gases on the ozone layer is an issue that should now be included in the list of issues requiring further action. Some action to address the problem is already been taken including the special report "Aviation and the Global Atmosphere" to be prepared by UNEP/WMO ozone Science Panel of the Montreal Protocol in association with ICAO.

(b) CLIMATE

1. Introduction

The Earth's climate is the product of a complex system of interactions involving solar radiation, the atmosphere, the oceans, the land surface including its vegetation and fresh water resources, and the ice-covered regions. It is a global system that knows no national boundaries. It is more than capable of transferring the impacts of atmospheric and oceanic events from one side of the Earth to the other in time frames as short as a week.

Food availability and national economic development is dependent upon a consistent climatic regime. Temporary climatic fluctuations, particularly extreme weather events occasionally disrupt the socio-economic stability of countries but more recently, scientific investigation has suggested that the global climate is in the process of changing with probable serious future consequences for people and the environment. The emission of radiatively active gases into the atmosphere from industrial sources transport and various land uses is changing the composition of the atmosphere. The expectation is of an enhanced greenhouse effect which may result in global warming. This in addition to introducing heat stress problems also disrupt normal wind and rainfall regimes with consequences for ecosystems, food security and socio-economic advancement. Global warming would also raise sea levels due to thermal expansion of the oceans and the melting of land-based glaciers. Current analysis indicates that the balance of evidence suggests a discernible human influence on global climate. Projections suggest that in the course of the next few decades temperates may rise by about 1°C and by a further degree by 2100. A corresponding rise in sea level would be about 15 cm. High emission scenarios combined with high climate sensitivities project significantly higher future values than the best estimate values given above. Regional temperature and sea level changes could differ substantially from the global mean values. In all cases the average rate of warming would probably be greater than any seen in the last 10,000 years.

Future unexpected, large and rapid climate system changes are by their nature, difficult to predict. This implies that future climatic changes may also involve 'surprises' introducing additional stresses and risks for people and their way of life.

While much is known of the physics , chemistry and dynamics of the atmosphere the complex interactions of a changing atmosphere give rise to considerate uncertainties and gaps in knowledge. Present climate variability daily introduces problems for societies in one part of the world or another - flood, extremes of heat and cold, tropical storm etc. Climate change will exacerbate these problems.

Potential health effects of climate and climate change was recently reviewed by an international task group consisting of eminent scientists in the field, on behalf of WHO, WMO and UNEP. The possible health impacts could occur in a number of ways, via pathways of varying directness and complexity including disturbance of natural and man-made ecosystems. It is anticipated that most of these impacts would be adverse. However, with some exceptions, relatively little research has been undertaken that would enable quantitative description of these probable health impacts to be made.

The complex and interdisciplinary nature of climate and climate change issue requires enhanced coordination of climate related activities involving a number of international, governmental and non-governmental organizations . To this end and to establish a system-wide strategy in the field of climate and climate change, a "Climate Agenda" has been prepared on behalf of WMO, UNEP, UNESCO/IOC, FAO and the non-governmental International Council of Scientific Unions (ICSU).

The proposed objectives and major programme thrusts including assessments policy, and management in section 3 (sub-section 3.1 to 3.3) below are based on the respective formulations presented in the Climate Agenda. It should be noted that the Climate Agenda received support from the UNEP GC18 and from the Commission on Sustainable Development at its fourth session.

2. Objectives

- Enhancing understanding of the climate system and improving the ability to predict future climates.

- **Applying these predictions in an operational manner for socio-economic development.**

- **Assessing the environmental and socio-economic implications of future climates to allow identification of options to enhance socio-economic development and protect people and the environment.**

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 9: "Protection of the atmosphere" - **UNEP; WMO.**

3. Major programme Thrusts

3.1 Assessments

Scientific research and observations will be implemented by Governments under the Climate Agenda coordinated by international organizations with relevant programmes contributing to the Agenda.

- Explore new frontiers in climate science and prediction by acquiring the ability to simulate past, present and future climates, including the influence of human activity at those spacial and temporal scales of interest to Governments.

  specifically:

  - Develop climate prediction and forecasting capabilities.
  - Understand the biological and chemical influences on atmospheric composition and climate;
  - Understand the natural variability and the physical processes controlling the climate system;
  - Understand past climates;
  - Understand human influences on the climate system.
  - Develop a scientific capacity worldwide.
  - Improve the understanding of the global atmospheric impact of aircraft engine emissions.

- Provide climate services for sustainable development through the introduction, on an operational basis, of information and predictions on climate, climate change and variability into socio-economic decision-making.

  specifically:

  - Deliver operational climate forecasts and assess trends in climatic variables.
  - Establish networks of national, regional and global climate services.
  - Provide assistance to nations in response to climate extremes and climate-related hazards, especially drought and desertification.

- Undertake climate impact and response strategy assessments to reduce vulnerability including identifying the means by which nations could reduce their vulnerability to climate, climate variability and both natural and human induced climate change.

specifically:

- **Identify environmental and socio-economic implications of both climate variability and change.**

- **Identify options for national response strategies to reduce vulnerability to climate variability and change.**

- **Develop and publicize optimized methodologies for evaluation of climate impacts and response strategies.**

- **Establish a coordinated network of national and regional climate impact and response strategies.**

- Make dedicated observations of the climate system to provide on an operational basis, those systematic observations on the climate system which will enable the research and assessment programmes identified above, to meet the requirements of nations.

- Carry out through the IPCC periodic assessments of the science of climate change, its environmental and socio-economic impacts and of the range of responses to mitigate or adapt to human induced climate change.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, ICAO, UNDP, UNEP, UNESCO/IOC, WHO, WMO and the World Bank, ICSU.

3.2 Policy

Policies have been instituted or are under negotiation to address all the currently identified major atmospheric issues. For climate, policy is determined under the United Nations Framework Convention on Climate Change. Implementation in developed countries is, in some cases, inadequate and developing countries are only beginning to institute policies and actions to address the issues.

General policy considerations include:

- Promote the adoption of policies which address atmospheric protection issues on a comprehensive and resource management basis and ensure that one environmental problem is not solved at the expense of another; mechanisms must ensure that the linkages between atmospheric issues are properly addressed; application of a precautionary approach through preventative and corrective measures based on current knowledge.

- Promote policies which will increase developing country actions to protect the atmosphere from adverse change; environmental protection measures should be integrated into the sustainable development plans of individual nations.

Climate specific policy considerations:

- Evaluate all options for climate mitigation in their different regional, national and sectoral contexts. A combination of several mitigation options along improved and new technology chains, plus association synergies, will be needed to achieve substantial emission reductions particularly through stronger reliance on carbon-free energy carriers.

- Consider policies that foster the adoption of mitigation technologies that enhance economic development without undermining global environmental sustainability.

- Give priority to efficiency improvement to achieve cleaner and higher quality energy services while mitigating adverse environmental impacts.

- Examine the application of market and non-market instruments in energy end-use sectors. Identify policy instruments for fully internalizing environmental externalities and abolishing subsidies.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, ICAO, UNDP, UNEP, UNESCO/IOC, WHO, WMO and the World Bank, ICSU.

3.3 Management

The primary responsibility for carrying out climate related research and assessment lies with Governments. International organizations and specialized agencies, within their capacity and specified responsibilities coordinate dedicated scientific research and observation programmes implemented directly with other organizations, governments and governmental and non-governmental institutions. These programmes which include the World Climate Programme, the Global Observing Systems, the Geosphere-Biosphere Programme and the Human Dimensions Programme among others, are integrated under the multi-agency coordinated Climate Agenda.

The principal assessment body for climate change related matters is the Intergovernmental Panel on Climate Change which operates under the auspices of the World Meteorological Organization and the United Nations Environment Programme.

The principle management process to stabilize concentrations of greenhouse gases in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system is the Framework Convention on Climate Change, implemented under the auspices of the United Nations.

Specific management considerations:

- At the international level:
  - Enhance coordination between various conventions, protocols and regional agreements to protect the atmosphere.
  - Provide comprehensive scientific, technical and economic assessments of the major human activities contributing to climate modification through a better coordinated institutional approach.
  - Foster the inter-agency initiative, the Climate Agenda, to ensure resources available to implement international climate related activities that contribute to the implementation of the UNFCCC.
- At the national level:
  - Encourage Governments to ratify and implement all relevant conventions, protocols and regional agreements related to the protection of the atmosphere and climate.
  - Develop, assist Governments in national environmental programmes that address protection of the atmosphere including climate.
  - Enhance research programmes in the areas concerning human dimensions and environmental impacts of climate change.
  - Encourage broader participation by all stakeholders including environmental NGOs, industries, communities and academic institutions in formulation and implementation of atmospheric protection strategies.
  - Seek innovative solutions for atmospheric protection through enhanced research.
  - Ensure multi-disciplinary approaches to policy determination involving both social and physical scientists.

- Ensure continuing viability of financial mechanisms supporting climate protection measures to assist developing countries in implementing their commitments.

Involved agencies and organizations in the above programmatic Thrust include: FAO, IAEA, ICAO, ICSU, IEA, UNDP, UNEP, UNESCO/IOC, UNIDO, WHO and WMO, ICSU.

4. Emerging issues

An important long-term goal is the accurate projection of regional climate change, so that potential impacts can be adequately assessed. Progress towards this objective depends on determining the likely global magnitude and rate of human-induced climate change, including sea-level change, as well as the regional expression of these quantities. The most urgent scientific problems that have emerged as requiring attention concern:

- The rate and magnitude of climate change and sea level rise
- Detection and attribution of climate change
- Regional patterns of climate change

in respect of the processes, impacts and response to climate change:

- The risks posed to food security, water resources, human health and other natural and socio-economic systems and the identification of and possible effect of response options to mitigate climate change are emerging issues that require urgent further analysis.

4. CARING FOR BIOLOGICAL RESOURCES

(a) BIOLOGICAL DIVERSITY

1. Introduction

The Earth is home to a rich and diverse array of living organisms, whose species, the genetic diversity they comprise and the ecosystems they constitute form biological diversity. They provide the goods and services essential to human livelihoods and aspirations, and enable societies to adapt to changing needs and environments. Recent advances in biotechnology have demonstrated the likely potential of genetic resources for improvement of agriculture, fisheries, forestry, industry, health and the environment. Today, the scale of human impact on biodiversity is increasing dramatically due to activities that arise from the rapid growth in human population and changing patterns of consumption and production. Despite mounting efforts over the last two decades, the loss of the world's biological diversity has continued mainly from habitat destruction, over-harvesting, pollution and inappropriate introduction of exotic species. During the last few millennia a large and increasing number species have become extinct as a result of human activities.

Since the beginning of 17 century 484 animal and 654 plant species are recorded as having become extinct although this is almost certainly an underestimate, especially as regards tropical regions. Based on an assumed average life span of 5 to 10 million years for organisms with adequate fossil records, the extinction rate for these groups has been estimated to be 50-100 times the average expected natural rate. In addition, there has been widespread loss of populations and genetic resources.

The loss of biological diversity represents a serious threat to human development and requires priority actions to be taken to focus on improving the knowledge base, correcting past policy and market failures and ensuring that conservation and sustainable use of biological resources and the equitable sharing of benefits are made an integral part of all socioeconomic development.

Conservation of biological diversity and sustainable use of biological resources cut across a wide spectrum of corrective actions including those related to macro-economic policy. The activities under chapter 15 and the related chapters of Agenda 21, together with the measures contained in the Convention on Biological Diversity and other relevant legal instruments and agreements, thus need to be integrated in a coordinated and coherent fashion into political social and economic policy-making at every level.

2. Objectives

The objectives of the systemwide strategy in the area of biological diversity are intended to improve:

- the conservation of biological diversity;
- the sustainable use of its components;
- the fair and equitable sharing of benefits arising out of the utilization of genetic resources including by appropriate access to these resources and appropriate transfer of relevant technologies.

These objectives are embodied in the Convention on Biological Diversity as well as chapters 15 and 16 of Agenda 21.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 15: "Conservation of biological diversity" - **UNEP**.

3. Major programmatic thrusts

The range of system-wide programme activities for meeting the objectives and priority needs of biodiversity conservation and sustainable use will be multidisciplinary to be able to address biodiversity at various levels: ecosystems level, species level, resources level, processes, economics and legal aspects.

3.1 Assessment:

Estimating the true magnitude of existing national, regional or global biodiversity, precise rates of its loss, or even its current status is challenging because no systematic monitoring is in place and much of the baseline information is lacking. Up-to-date quantitative and qualitative data gathering will underpin all types of management activities and policy decisions. Decisions about what should be conserved should be based on objective criteria and for most countries this will require the development of analytic tools for assessing the status of national biodiversity, identifying threats to them, assessing current capacities, collecting socio-economic data useful in evaluating costs and benefits of conservation and sustainable utilization and identifying gaps in knowledge and potential conflicts. The acquisition, organization and analysis of information as a tool for decision-making must be issue-oriented and guided by specific objectives. This will also imply the dissemination of information to those who can do something about it through the establishment of suitable mechanisms for information exchange.

- Identify and monitor in a systematic way genetic resources, species and ecosystems.

- Establish mechanisms to collect, analyze and disseminate more reliable and adequate data and develop monitoring mechanisms to measure achievements made at the national, regional and global levels. Attempts should be made to remedy the severe lack of information in developing countries on the status of their national biodiversity, a deficiency that impedes the development of monitoring and sound management.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, UNCTAD, UNDP, UNEP, UNESCO/IOC, UNIDO, UNU, WHO, WTO, World Bank; GEF, Secretariat of CBD.

3.2. Policy

Conservation and sustainable use of biodiversity will require greater levels of co-operation and co-ordination than has previously been seen in traditional sectoral approaches. A balanced mix of incentives and disincentives, working alongside environmental impact assessment, biological resources accounting, conservation laws, market adjustments and traditional regulatory needs is needed at the country level to ensure that conservation and sustainable use of biological resources are integrated into social, cultural and economic contexts in which actions will be taken.

- Support to the development of mechanisms for appropriate co-ordination among biodiversity action plans and the plethora of other action plans and strategies called for by various treaties and international institutions, monitoring of their implementation and reporting on progress made.

- Examine ways to ensure that concerted effort be made to develop common strategies for co-ordinating the implementation of Chapter 15 with other relevant chapters of Agenda 21 and the CBD (e.g. identify policy issues, respective areas of competence, future action required and monitoring and evaluating progress).

- Promote the development of a coordinating mechanism for existing conventions and agreements on biological diversity for effective implementation of those agreements and rational use of the limited resources.

- Encourage the development of policies that look holistically at the implementation of biodiversity related conventions and the linkages with other international conventions on related issues to ensure integrated and consistent policy evolution at national and regional levels.

- Initiate studies and discussions on the impact of intellectual property regimes relating to genetic material on the conservation and sustainable use of biological resources and on how a fair and equitable sharing of these resources and the benefits generated may be achieved and how to develop adequate system on IPR for protecting the collective knowledge and innovations of indigenous people and their communities as a major social group in biodiversity management.

- Support policies that encourage the use of ecological agricultural methods as unsustainable patterns of industrial agricultural production will inevitably degrade the productive capacity of agro-ecosystems and thereby accelerate the conversion of non-agricultural lands to agricultural production.

- Promote activities aimed at the restructuring and reforming of national policies including development of incentive and disincentive measures and revision of existing and/or development of new legislation to realize the objectives of Agenda 21 and the CBD.

- Assist Governments, in full partnership with the indigenous people and their communities and other local communities - taking into consideration their role in conservation management and sustainable use of biodiversity - to examine the impact of existing land tenure systems on biodiversity conservation, and to make compatible the conservtion concepts with the requirement to reduce environmental health risks to local communities.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, UNCTAD, UNDP, UNEP, UNESCO/IOC, UNIDO, UNU, UPOV, World Bank, WTO, WIPO, GEF, Secretariat of CBD.

3.3. Management

Management systems should be able to respond to changing social, biological and physical environments while still maintaining essential ecosystem functions. The strategy will promote the development of options, priorities and tools to address biodiversity concerns as identified by assessment and would include the preparation of national biodiversity strategies and action plans and regional programmes, support to the implementation of relevant regional and global agreements and action plans, and ensuring the integration of biodiversity aspects into economic development policies and programmes.

- Establish mechanisms for improving scientific, technical, managerial and institutional capacities of developing countries and countries with economies in transition to develop and implement national biodiversity strategies, plans or programmes.

- Develop and refine economic tools to determine costs and benefits of biodiversity conservation and sustainable use of biological resources and their distribution at the local, national, regional and global levels.

- Assist Governments to develop, adopt and strengthen relevant national arrangements to support the best possible land tenure systems that facilitate active involvement and participation of local communities in biodiversity conservation activities.

- Develop and strengthen a joint to assess the positive and negative impacts of macro-economic and other factors affecting biodiversity e.g. debt, consumption and production patterns, land tenure systems, population, etc.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, UNCTAD, UNDP, UNEP, UNESCO/IOC, UNIDO, UNU, WTO, WIPO, UPOV, World Bank; GEF, Secretariat of CBD.

4. Emerging issues

A radical change of view will be required among key decision-makers if biodiversity concerns are to be adequately met. Biodiversity needs to be seen as a political priority not only in terms of its conservation but also for the potentially valuable contribution it can make to the improvement of peoples' lives, especially in developing countries.

Recognition of the earth as one interconnected ecosystem has increased global understanding that actions in one area affect the well being and ecosystem health elsewhere. Deforestation and fossil fuel burning, for example, contribute to climate change through global warming. Ecological effects on biological diversity due to climate change and desertification will amplify the impacts that are already being imposed on natural ecosystems by humans. Many species (e.g. migratory species; species dependent on the timing of ice-melting; Arctic communities; marine, coastal and peripheral populations; genetically impoverished species; mountain and alpine communities; species in drylands, semi-arid and arid ecosystems) are all likely to be adversely affected by global warming, and the predicted climatic changes may bring about catastrophic losses in genetic resources, species and ecosystem diversity.

Global warming could indeed play havoc with the world's living organisms, affecting humanity itself. Many species (including some human populations) on islands, floodplains or coastal areas may not be able to redistribute themselves fast enough to keep up with the projected climatic changes. Many of the islands could well be completely submerged, wiping out their flora and fauna.

The loss of biological diversity is particularly important in dry lands where natural habitat and native vegetation are often the sole livelihood of farmers and pastoralists. Degradation of drylands forms a threat to biological diversity and the carrying capacities of these lands.

(b) BIOTECHNOLOGY AND BIOSAFETY

1. Introduction

Biosafety is an issue of increasingly mounting debate on the national, regional and international levels. It concerns itself with the safe application of modern biotechnology products and processes which will undoubtedly offer immense benefits to society in the near future. It is widely acknowledged that biotechnology will contribute substantially to the improvement of agriculture, fisheries, forestry, industry, health care and environmental management. Recent developments in modern biotechnology techniques present potential link between conservation and optimum use of biological resources. Biotechnology also offers developing countries a means of tapping their enormous genetic resources for economic development.

Biotechnology is broadly defined to include any technique that uses living organisms or parts of organisms to make or modify products, to improve plants or animals, or to develop microorganisms for specific use. These are power technologies, supported by complementary bioprocess engineering to help translate new discoveries of life sciences into practical products and services. As such, biotechnology should also be seen as an integration of the new techniques emerging from modern biotechnology with the well-established approaches of traditional biotechnology.

Modern biotechnology has been seen as a new tool, receiving worldwide attention even prior to UNCED and more so since then, because of the perceived potential impact on both the economy and society. It is a tool which continues to be further developed and is being applied in an increasing number of sectors to improve the effectiveness of the way in which biodiversity-based products and services are provided.

A major issue that will, however, affect the transfer and application of biotechnology is the regulatory climate governing the safe development and application thereof, and, the transfer and use of its products, and in particular, the release of living modified organisms into the environment. Questions arise regarding the capacity of existing regulatory approaches and institutions to address issues related to safety in biotechnology. The biosafety issue has, therefore, been discussed in two global fora, UNCED and the Convention on Biological Diversity.

Chapter 16 of Agenda 21 on "Environmentally Sound Management of Biotechnology" recognizes that the community at large can only benefit maximally from the potentials of biotechnology if it is developed and applied judiciously in order to avoid, to the extent possible, negative side effects. It highlights the need for internationally agreed principles as a basis for guidelines to be applied for safety in biotechnology.

The biosafety issue was also considered within the framework of the Convention on Biological Diversity in Article 19, paragraph (3), and Article 8, paragraph (g). Article 19 (3), calls upon the Parties to the Convention to consider the need for and modalities of a protocol, setting out appropriate procedures, including, in particular, advance informed agreements, in the field of the safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity. Article 8(g) calls upon the Parties to establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse impacts on the conservation and sustainable use of biological diversity.

Given the rapid development in the use of biotechnology products and processes and the need for developing countries to reap the benefits of this technology, while avoiding possible risks associated with its application, it is high time, indeed imperative, that international agreement on safety in biotechnology is speedily attained, taking into account the knowledge and experience gained so far.

2. Objectives

The objectives of the system-wide strategy in the area of biotechnology and biosafety are intended to ensure the safe and judicious application of biotechnology, with a view to maximizing its potential benefits while avoiding to the maximum extent possible, adverse effects on human health and the environment. More specific objectives would be:

- Strengthening the capacities of countries, developing countries in particular,to introduce and implement national mechanisms for safety in biotechnology consistent with relevant provisions of the Convention on Biological Diversity and appropriate to their particular circumstances, whilst providing a harmonized approach to risk assessment and management in biotechnology within a global biosafety framework;

- Helping harmonize national biosafety instruments and facilitate the implementation of any future international agreements on biosafety;

- Helping to build the technology assessment capacity necessary at national and regional levels for the management of environmentally sound biotechnology, including environmental impact and risk assessment, with due regard to appropriate safeguards on the transfer of technologies;

- Creating, among the public and key decision makers, greater awareness of the potential and relative benefits and risks of the environmentally sound application of biotechnology;

- Strengthening endogenous capacity-building in the respective countries, so that they can assess, adopt, manage and apply environmentally sound technologies;

- Initiating long-term technological partnerships between holders of environmentally sound biotechnologies and potential users;

- Contributing the strengthening of international information networks which link relevant national, sub-regional, regional and other international systems;

- Facilitating and provide regional and international consultations, harmonization, advisory services and cooperation necessary to address biosafety issues beyond national borders, such as transboundary movements of living modified organisms;

- Facilitating smooth and rapid progress of the work initiated by the Conference of the Parties to the Convention on Biological Diversity on the development of a biosafety protocol within the context of the Convention.

These objectives are embodied in the Convention on Biological Diversity as well as Chapters 15 and 16 of Agenda 21.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 16: "Environmentally sound management of biotechnology" - **UNIDO.**

3. Major programmatic thrusts

The range of system-wide programme activities for meeting the objectives and priority needs concerning biotechnology and biosafety will be addressed by:

- promoting actions to facilitate a better understanding of biodiversity and related biotechnology and biosafety issues, including risk assessment/risk management and information exchange (such as, among others, dissemination of results of biotechnology research, development and application), and

- building capabilities at national and regional levels to acquire, assimilate and utilize technology for environmental management and sustainable development, including restructuring of the scientific and technological infrastructure in developing countries and countries with economies in transition.

3.1 Assessment

Since the first breakthrough of modern biotechnology, the world has already witnessed successful applications in the development of pharmaceutical and health care products and services. In recent years, biotechnology applications in the field of agriculture and food are emerging, in part due to simplification of regulatory procedures in general and increasing acceptance on the part of consumers. There are also great opportunities for biotechnology in monitoring, prevention and remediation of environmental degradation due to the increasing pervasiveness of pollution amid growing concern for conserving natural ecosystems. Among its many benefits, modern biotechnology is considered to be less polluting, produces more manageable wastes, and consumes less energy than conventional techniques. It is widely believed that the next area of increasing biotechnology application will be in the protection and restoration of the deteriorating environment which affects countries and people worldwide.

Biotechnology provides tools for advancing human understanding of the living world and thus may aid in the assessment of biodiversity as well as assessing the impact of development on biodiversity. It can contribute greatly to biodiversity conservation in situ and ex situ, thereby enhancing our ability to conserve and manage biodiversity wisely.

- Establish an international database on the release of genetically engineered oganisms.

- Support the establishment of an International Register on Biosafety which would contain information on the numbers and kinds of organisms modified, the methods used, the purpose of the modification, the organization responsible and biosafety considerations.

- Document and disseminate information on case studies and experiences of successful efforts to promote the fair and equitable sharing of the benefits of biodiversity utilization.

- Prepare inventories of indigenous knowledge, in particular concerning information on biodiversity conservation. The inventories will be prepared in a way that does not undermine the rights of indigenous peoples and local communities. Also prepare an inventory of transferable biotechnologies and know-how that are relevant to the conservation and sustainability of biodiversity or that make use of genetic resources that do not damage the environment.

Involved agencies and organizations in the above programmatic thrust include: FAO, UNDP, UNEP, UNIDO, WHO, UNESCO, IAEA, World Bank; Secretariat of the CBD, IICA, ASEAN, OECD, Pan African Scientific Union.

3.2 Policy

There is a need for policy framework to address the implications arising from the impact of products of modern biotechnology. Rapid advances in the field of biotechnology have resulted in the artificial modification of thousands of organisms. Much attention needs to be focused on understanding the implications associated with the release of genetically engineered organisms into the environment.

- Encourage countries and regions to develop national/regional biosafety regulatory frameworks and incentive mechanisms to minimize adverse impacts of biotechnology products to human health and environment.

- Undertake policy studies on the fair and equitable sharing of biological resources and the benefits which they generate, taking into account issues such as access to genetic resources, access to technology and technology transfer, the collective knowledge and innovation of indigenous people and the rights of farmers.

- Support the establishment and/or strengthening of regional advisory services/committees/appraisal mechanisms, harmonization of risk assessment/risk management procedures and guidelines, data validation and mutual acceptance of data.

- Develop and distribute harmonized methodologies and tools for identification and assessment of risks and implications to human health and the environment of risks posed by biotechnology products.

- Determine investment costs for technology transfer and biotechnology development as a component of national development strategies, taking into account issues such as socio-economic impacts and indigenous contributions.

- Address issues such as the promotion of an international code of conduct on releases of genetically engineered and exotic organisms into the environment.

- Enhance public awareness and understanding of biotechnology as a critical pre-requisite for the successful wide-scale application of biotechnology.

- Involve the media in helping to increase awareness along with accurate understanding of emerging biotechnologies and their impacts.

- Enhance the accountability of the private sector to the public through provision of proper information to consumers in connection with the commercialization of new biotechnology products processes.

- Establish an effective international clearinghouse mechanism on biosafety, built on the existing but isolated efforts currently being promoted by various international organizations. UN agencies will take the lead in coordinating the efforts to ensure minimum standards in the safe handling and transfer of biotechnology processes and products.

- Support to the work of the Ad Hoc Working Group to develop a protocol on biosafety under the auspices of the Convention on Biological Diversity.

- Undertake a joint review of all UN agencies' activities built on the work of the already existing informal UNIDO/UNEP/WHO/FAO working group on biotechnology safety relevant to biotechnology application and biosafety in order to identify overlapping, gaps, strengths and weaknesses and the comparative advantage of each organization, and to develop joint programme, as appropriate. In such a review, consideration will be given to similar non-UN initiatives, such as the Biotechnology Advisory Service by the Biotechnology Advisory Commission of the Stockholm Environment Institute and the United Kingdom-Netherlands initiate on biosafety guidelines.

Involved agencies and organizations in the above programmatic thrust include: **FAO, IAEA, ILO, UNCTAD, UNDP, UNEP, UNESCO, UNIDO, WHO, WTO, WIPO, UPOV, World Bank; Secretariat of CBD.**

3.3 Management

Appropriate initiatives involving biotechnology applications and management can positively impact important sectors and yet operate at a level appropriate to each country, by the step-wise fostering of development vertically from simple to more sophisticated as countries develop infrastructural support in biotechnology expertise, and horizontally or regionally as networks are built and developed on themes of common interest among countries. Moreover, with proper planning and management, biotechnology lends itself to:

- Support training activities for building capacities to acquire, assimilate and utilize technology for environmental management and sustainable development. It is the building of technological capabilities that will enable the countries to make the transition to sustainable development and effectively deal with the barriers. For new technologies to be absorbed effectively, human skills for handling them must be developed.

- Strengthen cooperation with the Information Resource on the Release of Organisms into the Environment (IRRO), a global referral service on information regarding genetically modified organisms and its accessibility including experiences of IRRO and the training activities which it carries out.

- Continue to support the MIRCENs by expanding the network and re-orienting existing MIRCENs to execute pilot projects for the conservation and sustainable use of microbiological resources, including support training activities in microbiology and related technologies.

- **Provide advisory services to Governments in the assessment of releases of genetically engineered and exotic organisms into the environment and elaborate a biosafety manual and organize biosafety trainings.**

- **Assist countries and regions in the establishment of regional and sub-regional focal point/information centres/systems especially in developing countries to promote the use of modern information handling technology, to provide valid information on management of biotechnology/biosafety and to train national decision makers on information use.**

- **Support cross-fertilization of knowledge and biotechnology experiences among the many regional biotechnology networks in order to facilitate exchange and diffusion of technologies with minimal and cost-effective investment.**

- **Assist national governments to promote exchange of information with NGOs and facilitate communications relating to emerging biotechnologies. Well-informed NGOs can play a useful role in helping to identify appropriate biotechnologies for society.**

Involved agencies and organization in the above programmatic thrust include: FAO, IAEA, ILO, UNCTAD, UNDP, UNEP, UNESCO, UNIDO, UNU, UPOV, WIP, WHO, World Bank; WTO, Secretariat of the CBD.

4. Emerging Issues

National governments with no administrative regulatory mechanisms or with outdated ones should be strongly urged to seek advice and/or assistance from international agencies with experience in promoting biosafety regulation. Such action must take place to assure safety in national as well as international development in biotechnologies in spite of the outcome of the ongoing international debate on an international biosafety protocol. A transparent policy and plan for the release of genetically engineered organisms must also be adopted.

The area of the fair and equitable sharing of the benefits of biodiversity utilization is a critical aspect of the CBD. Little is known about how such sharing could be done and it is important to assist Governments in formulating relevant and appropriate policies that promote this objective of the CBD. In order to promote this objective, there is, therefore, a need to develop effective ways of fostering cooperation between the private sector and public institutions in the developing countries and in the countries with economies in transition.

CHAPTER II: SUSTAINABLE PRODUCTION AND CONSUMPTION PATTERNS

1. CLEANER PRODUCTION, ENERGY, ATMOSPHERIC POLLUTION

2. SUSTAINABLE CONSUMPTION

1. CLEANER PRODUCTION, ENERGY AND ATMOSPHERE POLLUTION

1. Introduction

Current trends in population growth and industrialization cause increased accumulation of wastes and pollutants and the unsustainable use of natural resources. The utilization of inappropriate technologies and the widespread adoption of unsustainable production and consumption patterns lead to high waste yields and emissions into the atmosphere, and are inefficient in the use of resources. The resultant pollution and natural resource degradation have, in turn, a negative impact on human health and welfare, as well as on nature itself.

Energy is a major component of economic development. It is not an end in itself, but rather a means of achieving sustainable development. World energy demand has continued to grow. Between 1970 and 1993, demand grew at an average annual rate of 2.5 percent. In particular, fossil fuel use is the dominant contributor to global warming. Total world emissions of CO_2 are estimated to rise to 7.11 billion tonnes of carbon by 2050, as compared to 5.85 billion tonnes of carbon in 1992. This continuing rise in anthropogenic emissions of CO_2 and other greenhouse gases posses potentially substantial risks to global physical and ecological systems, human health and socio-economic sectors.

If sustainable development is to be achieved, production processes, products and services have to be oriented towards new patterns, in order both to alleviate environmental stress and to achieve more efficient industrial productivity. Energy paths must be made more sustainable, from both an environmental and socio-economic perspective, while ensuring the adequacy of supply and reliability.

Over the past 30 years, the industrialized nations have responded to environmental degradation in four successive steps: ignore, dilute, control and prevent. In this sequence, each step can be seen as the "solution" of the problems that could not be solved with the strategy of the former stage. Cleaner production which promotes the preventive approach, is a response to the additional financial burden brought by costs of pollution control and end-of-pipe treatment. Cleaner production and eco-efficiency are very similar approaches which stress the potential for maximizing environmental development while minimizing throughput of energy and materials. This brings a powerful combination of economic savings and environmental improvements and this is why cleaner production has been recognized in Agenda 21 as a means of reconciling development and environmental protection. Though emissions of carbon dioxide do not cause local environmental degradation, the global atmospheric build up of greenhouse gas emissions is also one of the main drivers towards increasing efficiency of energy supply, distribution and use.

Cleaner production is defined as the continuous application of an integrated preventative environmental strategy to processes and products so as to reduce risks to humans and the environment. For processes this means: conserving raw materials and energy; eliminating the use of toxic raw materials; and, reducing the quantity and toxicity of all emissions and wastes before they leave a process. For products this means reducing environmental impacts along the entire life cycle of a product - from raw material extraction to disposal. Cleaner production includes the development and use of both "hard technologies" and equipment, and of management tools. Cleaner production also encompasses activities related to improvements in occupational safety and health and the working environment.

As the world population grows and resources are used beyond the Earth's carrying capacity, societies, particularly the affluent, must strive to establish an improved rationality in their consumption, distribution and production patterns. This will require the development and use of new policy and management tools in both government and industry, as well as the development and use of environmentally sound and sustainable energy technologies, with a focus on cleaner and safer technologies that prevent pollution and use energy and water efficiently and reduce the use of toxic substances. In the energy sector, policies are needed to promote the use of energy efficiency and sustainable energy technologies such as renewables. Land use planning and reduction in unnecessary transports as a means to energy requirement reduction will have to be addressed.

2. Objectives

The objectives of the system-wide strategy in the area of cleaner production, energy and atmospheric pollution are:

- building consensus on the preventative rather than cure approach in industrial development policies and strategies within the UN system;

- improving the coordination of and avoid duplication of cleaner production and energy activities within the UN system;

- identifying and develop sustainable industrial and energy policies and strategies aimed at increasing resource productivity and preventing pollution;

- providing information on cleaner production techniques and technologies, including sustainable energy technologies, and environmental management practices and tools.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 9: "Protection of the atmosphere" - **UNEP & WMO.**

3. Major programmatic thrusts

3.1 Assessment

There is an on-going need to gather quantitative and qualitative data on the environmental impacts of industrial and energy development. Data bases and methodologies for comparative assessment of the full energy chains of different energy sources, with respect to their technical, economic, environmental and human-health impacts will have to be developed. As the environmental impacts of industrial activities often traverse borders, this assessment should be of a global nature. This assessment activity will support decision-makers in setting priorities and selecting appropriate action.

A commons set of indicators should be developed and widely agreed to. These indicators would be for measuring progress towards more sustainable production and consumption. This could lead to the adoption of an internationally agreed framework. There is also a need to assess barriers to the implementation of energy efficiency and renewable energy technologies.

Agencies and organizations involved in the above programmatic thrust include: FAO, IAEA, ILO, UNCTAD, UNDP, UNEP, UNIDO, WHO; World Bank, WTO, GEF, Regional Banks.

3.2 Policy

Sustainable industrial development requires greater levels of coordination between all levels of government, including consensus building with industry. A mixture of traditional approaches including market adjustments, voluntary approaches and regulatory regimes are needed at both the international and national level to promote cleaner production, energy efficiency, and renewable energy technologies.

- develop policies and strategies which require and encourage resource efficiencies in supply side processes (production);

- create a greater awareness of the benefits of cleaner production and of a preventive approach over a cure and respond approach;

- encourage the use of environmental technology assessment as a policy tool to help support the development, application and transfer of environmentally sound technologies. Environmental technology assessment is a process where the environmental aspects of a technology are explicitly analyzed and expressed.

- promote extended producer responsibility which aims to promote the integration of environmental costs associated with products and energy generation systems throughout their life cycle into the market price of the products and energy systems;

- provide and/or support alternative capital investment projects that are consistent with cleaner production thereby facilitate eco-efficient growth in developing countries;

- address subsidies and other fiscal schemes which encourage over-exploitation of natural resources, fossil fuels, and unsustainable forms of production;

- expand the use of management tools which are already available, such as environmental auditing, environmental reporting, and life cycle analysis; including, for energy carriers for greenhouse gas emissions.

- further develop existing information systems, and develop exchange focusing on cleaner and energy efficient technologies.

- develop policies and strategies which would limit pollution associated with transportation sources and traffic.

- promote enhanced occupational safety and health and working environment conditions for workers as an integral component of cleaner production programmes.

- build up of international consensus on tools and guidelines for comparative assessment of different energy sources.

Agencies and organizations involved in the above programmatic thrust include: DPCSD, FAO, IAEA, ILO, UNCTAD, UNDP, UNEP, UNIDO, WHO; World Bank, WTO, GEF, Regional Banks.

3.3 Management

- Facilitate the transfer of appropriate technologies, energy-efficient technologies and environmentally sound and sustainable energy technologies;

- Further develop and encourage the implementation of environmental management systems and tools, and promote responsible entrepreneurship by business and industry worldwide.

- Enhance capacity of countries - in particular developing and with economies in transition, in integrating environmental, social and economic considerations in energy sector development planning and decision-making.

- Build international consensus on tools, standards/guidelines on: environmental management systems, eco-labelling, life-cycle analysis, etc.

- Gather and disseminate best practice examples of cleaner production policies and strategies, and implementation of energy efficient technologies.

- Encourage education and training programmes in sustainable industrial development.

- Support and catalyze the UNEP/UNIDO National Cleaner Production Centres which promote the national dissemination of cleaner production policies, strategies, tools and techniques.

- Promote collaboration between employers and workers and their organizations within cleaner production programmes.

Agencies and organizations involved in the above programmatic thrust include: DPCSD, FAO, IAEA, ILO, UNCTAD, UNDP, UNEP, UNIDO, WHO; World Bank, WTO, GEF, Regional Banks.

4. Emerging Issues

Changes in industrial development leading to more sustainable patterns of consumption and production in industrialized countries may or may not enhance, and may even negatively influence the development prospects of developing countries. Further studies are needed in this area.

The attention of policy-makers is now extending to influence purchasing and behavioural decisions of end-users, who include households and individuals, producers (in their role as consumers of raw materials or intermediate products) and governments, who are often significant actors in their domestic markets.

Two emerging issues in the business and industry sector will influence government action to promote sustainable industrial development:

- environmentally motivated changes in product composition (dematerialization) is a process that is influenced by the need to comply with existing, or anticipate future, environmental legislation and consumer concerns.

- some industry sectors are undergoing a move from selling products to supplying customers with services which fulfil the same function.

Small and medium sized enterprises (SMEs) are an emerging sector and are ill-equipped or unconvinced of the need to adopt more sustainable production patterns. More efforts need to be placed on reaching this often highly polluting industry sector.

In the energy sector, the biggest emerging issue is arguably the worldwide restructuring of the electric power sector market. Privatilization, deregulation, and unbundling (of generation, transmission and distribution) are the new trends. This has significant implications for the environment. In industrialized countries, reform is targeted to lower electricity prices. This will likely lead to increased consumption, thereby increasing environmental damage. In developing countries, where electricity is often subsidized and thus under-priced relative to its full costs, the main goal of reform is to raise prices to world market rates. Reform should help reduce consumption and therefore reduce environmental impacts. It will be critical for environmental considerations to be incorporated into decision-making about restructuring plans.

2. SUSTAINABLE CONSUMPTION

1. Introduction

Agenda 21 states that "*the major cause of the continued degradation of the global environment is the unsustainable pattern of consumption and production, particularly in industrialized countries .... a matter of grave concern, which aggravates poverty and inequities*" and calls on developed countries to take the lead in promoting and achieving more sustainable consumption patterns.

Measures to be undertaken at the international level for the protection and enhancement of the environment must take fully into account the current imbalances in the global patterns of consumption and production. Special attention should be paid to the demand for natural resources generated by unsustainable consumption and to the efficient use of those resources consistent with the goal of minimizing depletion and reducing pollution. For instance, some 80 countries, comprising 40% of the world's population, are already suffering from serious water shortages and in many cases, scarsity of water resources has become the limiting factor to economic and social development.

The sustainable consumption concept addresses the entire mix of products and services throughout society, the processes that produce them, and the consumption and manufacture of many collateral and dependent products that the use of any one product or the provision of services implies.

Changing consumption and production patterns will involve going beyond policies targeted to suppliers (producers) intended to encourage eco-efficient practices in production. In the longer term, progress will depend on more fundamental changes in the lifestyle of consumers in developed countries as consumers represent the demand side of the economy. Their preferences and choices, to a large extend, determine the behaviour and output of other economic agents.

Meeting human needs, satisfying consumer wants, and reducing pressures on the environment in a framework of global equity are often conflicting objectives. Sustainable development requires nothing less than a dramatic shift in the way we produce, distribute, consume and dispose of our goods. These types of changes require a partnership effort from all stakeholders.

2. Objectives

The objectives of the system-wide strategy in the area of sustainable consumption are:

- Contributing to the understanding of the relationship between sustainable production and consumption.
- Encouraging governments to enact sustainable consumption policies.
- Promoting dialogue on environmentally sustainable consumption patterns.
- Creating increased consumer awareness of sustainable consumption.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 4: "Changing consumption patterns" - **DPCSD.**

3. Major Programmatic Thrusts

3.1 Assessment

Further work needs to be undertaken to improve understanding of the behavioural component of individuals' consumption decisions and thereby provide insights for formulating and implementing policies intended to modify individual decisions.

- Support the development of an integrated modelling framework and scenario-building which will enable long-term projections of socio-economic and environmental trends at global and, in some cases, regional level.

Agencies and organizations involved in the above programmatic thrust include: DPCSD, IAEA, UNCTAD, UNEP, WTO.

3.2 Policy

To change consumption and production patterns must involve a variety of instruments addressing complex socio-economic driving forces. However, industrialized country policies should first focus on improving the efficiency of energy and material flows and reducing their harmful impacts.

- Develop policies and strategies which require and encourage resource efficiencies in supply side processes (production);

- Create a greater awareness of the benefits of cleaner production and of a preventive approach over a cure and respond approach;

- Promote extended producer responsibility which aims to promote the integration of environmental costs associated with products throughout their life cycle into the market price of the products;

- Identify, collect and disseminate social policy instrument examples.

- Promote dialogue between employers and workers and their organizations on changing sustainable consuption patterns.

Agencies and organizations involved in the above programmatic thrust include: DPCSD, IAEA, ILO, UNCTAD, UNEP, WTO.

3.3 Management

- Support the international coordination of different national ecolabelling programmes.

- Coordinate and support green procurement activities.

- Encourage further development of and implementation of environmental management tools such as environmental management systems, life cycle assessment, design for the environment.

- Identify the potential positive and negative effects for developing countries and countries with economies in transition of changes in production and consumption patterns in developed countries.

Agencies and organizations involved in the above programmatic thrust include: DPCSD, IAEA, UNCTAD, UNEP, WTO.

4. Emerging Issues

The potential impacts of changes in industrialized country consumption and production patterns on developing countries are unclear.

With the emergence of standards for environmental management, and with the progression of eco-labelling and other such tools there is potential for the creation of new barriers to trade.

On per capita basis, the consumption gap between developed and developing countries is still very wide; even on favourable assumptions about economic growth in developing countries, great inequities in individual consumption levels and living standards would persist for many decades.

Information and education are essential to build understanding and awareness of why changes are needed.

CHAPTER III:

A BETTER ENVIRONMENT FOR HUMAN HEALTH

1. ENVIRONMENT AND HEALTH
2. URBAN ENVIRONMENT
3. TOXIC CHEMICALS
4. HAZARDOUS WASTE

1. ENVIRONMENT AND HEALTH

1. Introduction

The interdependence of environment, health and development is manifold and complex, but two aspects are dominant: (1) how well the environment can sustain life and health; and (2) how free the environment is of hazards to health. Health problems can be attributed to ill-planned and unsustainable development as well as to under-development; in either case, meeting the health needs of a population is an essential part of the achievement of the goals of sustainable development.

The first principle enunciated in the Preamble to the Rio Declaration on Environment and Development focuses on human health; *"Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature".*

Among the major factors identified as critical for the current situation of the environment, development and health in the world are: rapid population growth; increased consumption of natural resources; and increasing poverty. Limited population size is crucial to the achievement of sustainable development, as growth increases the pressure on resources and on the capacity of the ecosystems to support human activity for development. Poverty is closely associated with ill-health, premature death and degradation of the environment. Of particular importance is tackling health problems in the context of environment and development based on the principles of equity, are the special needs of vulnerable groups; infants; children; young people; women; and displaced persons.

For the developing world, the "traditional" hazards that produce infectious diseases related to environmental factors remain the most pressing health problem. The control of these diseases depends to a large extent on supplies of safe drinking water, provision of basic sanitation and waste management, proper shelter, improved availability and handling of food, and measures against disease vectors and against hazards in agriculture. Tropical diseases with an environmental etiology affect millions of people and frequently can be prevented or controlled through sound environmental management.

In developed countries the focus is often on "modern" hazards related to environmental pollution and lifestyles based on high resource consumption. Here the health problems are caused by vehicle emissions, municipal waste, industrial pollutants, poor management of toxic chemicals and hazardous wastes, as well as unhealthy diet, alcohol, smoking and drug abuse, with the associated increases in crime and other psychosocial problems. More and more developing countries are increasingly plagued by the health problems caused by "modern" hazards in addition to the "traditional" kind.

Certain environmental phenomena have health implications of global significance, such as the long-range transport of air pollutants, the transboundary movement of hazardous products and wastes, stratospheric ozone depletion, climate change, ocean pollution, and loss of biodiversity.

2. Objectives

- Providing an environment that promotes health for all
- Achieving development which is protective of environment and human health
- Making all individuals and organizations aware of their responsibility for health and its environmental basis

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 6: "Protecting and promoting human health" - **WHO.**

3. Major programmatic thrusts

3.1 Assessment

- promote increased awareness and understanding of interactions between the environment, health and development, among leaders and the public, so as to strengthen community action for health and sustainable development;
- improve technical capabilities for the monitoring and assessment of environmental risks to health;
- strengthen local, national and international environmental health information systems, for the exchange and proper use of information;
- promote research on health effects of environmental hazards and effective interventions;

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, UNCHS, UNDP, UNEP, WHO, the World Bank.

3.2 Policy

- promote the central role of health in decision-making and programmes on matters of environment and development, and to foster cooperation between health sector and related sectors in these processes;
- collaborate with national and local authorities in the creation of supportive environments for health;
- encourage the development of policies that take women's health and environment issues into account.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, ILO, UNCHS, UNDP, UNEP, WHO, the World Bank, Healthy Cities Programme Network.

3.3 Management

- support countries in providing the environmental elements required to meet basic health needs (concentrating on the most deprived peoples, those in peri-urban areas, those bypassed and neglected by development and on the health aspects of water, sanitation, housing and waste disposal);
- strengthen capabilities for emergency preparedness and response to cover the environmental and public health aspects of disasters and violent conflicts;
- promote conflict resolution by non-judicial means;
- strengthen capacities for human resources development in work related to the environment, health and development;
- improve technical capabilities for the management of environmental risks to health, i.e. their prevention, abatement and control (through capacity building, including information management support, training and technology transfer);
- foster environmentally safe and sound methods and technology for the effective control, prevention and treatment of disease and disability;
- promote and support other institutional and sectoral capacities for improving progressive policies, plans, legislation and actions on the environment, health and development.
- involve stakeholders, particularly local communities in improving the environment and making it more health-promotive.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, ILO, UNCHC, UNDP, UNEP, WHO, PEEM, the World Bank, Healthy Cities Programme Network.

4. Emerging issues

In the environment and health area, the continuing population growth and the rate of urbanization are overwhelming the capacity of governments to provide the basic environmental services - water supply, sanitation and disposal of waste - on which health of populations depend. There is already re-emergence of some infectious diseases associated with environmental change in certain areas of the world. The situation will worsen necessitating added and innovative support from the international community and the UN-system. The problem of excreta disposal and storm water drainage in large urban areas is particularly problematic *(see also section IIIb on Urban Environment)*.

Urban pollution from transport and energy production in particular continues to increase in many cities affecting the health of millions of people (air pollution, noise, accidents). The situation may well reach crisis proportions in certain areas requiring immediate and drastic action *(see also section IIIb on Urban Environment)*. The increased use of chemicals is also of concern and new approaches to health protection will need to be developed *(see also section IIIc on Toxic Chemicals)*.

The potential adverse health-and-environment impacts of new developments, including water resources developments, must continually be assessed and guarded against. Additional political support and improved intersectoral and interagency mechanisms are sorely needed.

The potential health impacts of climate change and ozone layer depletion and other global environmental health hazards are of greater importance and require continuous assessment and policy development *(see also section 1.3 a and b on Atmosphere)*.

The importance and the potential of local governments in addressing health-and-environment problems is being recognized more and more. The opportunities must be taken to engage and support them in the future *(see also section IIIb on Urban Environment)*.

The advances being made in communication and dissemination of information need to be fully employed by the health-and-environment programmes so that the requisite information is more accessible to all of the relevant authorities than it has been in the past.

Of increasing concern is the sustainability of environment and health programmes and services. This aspect must be given a central focus in the future.

2. URBAN ENVIRONMENT

1. Introduction

The Urban Environment differs greatly from the natural environment in which, and for which human biology evolved. Several features of the urban environment are more health and well-being promoting than the rural environment, including material and educational resources, access to health-care facilities, etc. Vital statistics in many countries indicate that the urban dwellers enjoy better health status than their rural counterparts.

On the negative side, city-living, particularly in the poor peri-urban areas, is associated with over-crowding, contagious diseases, accumulation of human excrement and household waste, occupational hazards, discharge of industrial effluents, and various forms of social disorders.

Uncontrolled urbanization, particularly in the developing countries, coupled with weak management and ineffective approaches to dealing with urban problems, is becoming an increasingly serious public health concern. Six major types of hazards have been identified:

- Rapid and massive urban population growth;
- Increased use of land in previously unsettled ecosystems, and occupation of urban land prone to landslides, floods and other natural hazards;
- Extremely high population density, particularly in the peri-urban areas;
- Increased prevalence of extreme poverty especially among women and children;
- Increasing microbial, chemical and physical pollution of air, water, food and soil because of industrialization, transportation, energy production and improper management of commercial and domestic wastes; and
- Inadequacy of physical (especially housing, water supply, sanitation and roads), social and health-care infrastructure.

The major health problems that result from these circumstances are: infectious respiratory and gastro-intestinal diseases (the "diseases of poverty"), chronic degenerative diseases associated with poor living and working conditions; and disorders due to stress of social isolation, insecurity, family dissolution and cultural conflict.

The urban poor are at the interface of underdevelopment and industrialization, and their disease patterns reflect this worst-of-both-worlds. They are vulnerable to chronic diseases (such as respiratory disorders from chronic air pollution and exposure to heavy metals in the ambient environment), influenza, tuberculosis, meningitis, etc., while being exposed to serious risk from the diseases associated with the rural poor, cholera, diarrhoeas, malaria, etc.

The rapid growth of many cities in the developing world together with massive population and industrialization has made it difficult to promote sustainable environmental management. Rapid urban expansion without adequate environmental management not only seriously threatens human health and well-being, but also reduces the capacity of urban centres to sustain their role as engines for economic growth.

Environmental problems are exacerbated in large, poorly managed cities, especially where local authorities are under-financed and have insufficient capacity. Their impact on human health and well-being varies from city to city and even more so within cities, according to their capacity to carry out environmental management and provide health services. Rapid urbanization also impacts on the natural resources both within the cities as well as in surrounding rural areas, through the conversion of land for urban areas, the extraction and depletion of natural resources and disposal of the ever-increasing quantity of domestic, commercial and industrial wastes. Although resource use and waste generation per capita tend to be low among the urban poor, their impacts in poor cities could be more severe because of inappropriate management.

Urban air quality has significantly improved in most developed countries over the past two decades, thanks to the use of unleaded fuel and strict enforcement of air quality standards. Still, in almost all major cities of the developing world, poor control of automobile emissions; use of poorly maintained ancient vehicles; boom in the use of two-stroke engines, air pollution and noise pollution are reaching unbearable levels.

An integrated approach for urban environmental management, including the various problems mentioned above, should be developed, adopted, adapted and applied for the improvement of human and environmental health, in consideration with socio-economic aspects. There is a need to ensure that various environmental issues are brought to the attention of national and local governments and for enhancing their capabilities to adopt appropriate environmental management strategies of urban areas and their local communities be engaged in creating healthier environments where direct action can be effective.

Coordination and management of local and municipal planning must engage and balance the interests of all stakeholders including service users, local authorities and their affiliated service departments, private investors, local businesses, trade unions, religious groups, community organizations, central and provincial governments, international development and financial institutions, etc., and may best be carried out in a more decentralized manner at the level of local government, with national and provincial agencies playing a policy and supporting role.

Typical objectives of local partnerships of local stakeholders in sustainable development planning include:

- creation of shared community vision of the future.
- Identification and prioritization of key issues.
- raising awareness and facilitating community-based analysis of local issues.
- development of action plans, draw on the experiments and innovations of diverse local groups.
- mobilization of community-wide resources to meet service needs.
- increase public support for municipal programmes.

City authorities have a critical role not only in the development, planning and management aspects but also in encouraging and supporting the initiatives and innovations of other groups within the city.

System-Wide Strategy should include, among others, pollution prevention and minimization, improvements in water supply, sanitation, operation and maintenance of infrastructure, and overall sewage and storm water drainage control. Several chapters, in this document refer to these issues in greater detail.

2. Objectives

- Promoting innovative strategies involving all the stakeholders, for integrated urban environmental planning and management, paying due attention to not only pollution prevention and control, but also to socio-economic aspects.
- Improving human and environmental health in urban areas, especially in developing countries.

The task managers under IACSD for the relevant chapter of Agenda 21 are:
- Chapter 6: "Protecting and promoting human health" - **WHO;**
- Chapter 21: "Environmentally sound management of solid wastes and sewage-related issues" - **UNCHS.**

3. Major programmatic Thrusts

The range of System-Wide efforts for meeting the objectives and priority needs of promoting environmentally sustainable development of urban areas will be multi-disciplinary and inter-sectoral cooperation is critical.

3.1 Assessment:

- Identify major environmental issues in urban areas, including their inter-linkages, their influence on human health and well-being, and assess their impacts on human health.
- Identify and analyze the true impacts of urban activities on natural resources particularly in relation to the quality of air, water, soil and food.
- Gather, analyze, and disseminate appropriate technologies and examples of best practices for pollution management.

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, ILO, UNCHS, UNDP, UNEP, The World Bank, WHO; WRI, ICLEI, IDRC, PEEM, USEPA; The Harvard University, the Mount Sinai Medical Centre, Healthy Cities Programme Network.

3.2. Policy

- Develop the methodology for integrated pollution management in an environmentally sound manner in urban areas through projects such as the Sustainable Cities Programme (SCP) and the Healthy Cities Programme.
- Disseminate information on the integrating disciplines to relevant stakeholders for managing the complex obstacles to improve human health.
- Promote the integration of environment and health considerations into decision-making processes in all development sectors, at national and local levels.

Involved agencies and organizations in the above programmatic thrust include: ILO, IAEA, UNCHS, UNDP, UNEP, WHO, The World Bank; WRI, ICLEI, IULA.

3.3 Management

- Enhance the capabilities of national and local Governments for the promotion of environmentally sound management of pollutants.
- Implement pilot projects to promote the adoption of appropriate environmentally sound technologies for efficient pollution control and management in urban areas.
- Strengthen the capacity of local governments to monitor the environmental risk factors for vector- and rodent-borne diseases, such as dengue and plague, for effective and pre-emptive response to sudden outbreaks.

Involved agencies and organizations in the above programmatic thrust include: ILO, IAEA, UNCHS, UNDP, UNEP, WHO, The World Bank; ICLEI, IULA.

4. Emerging Issues:

Consumption of natural resources in cities is on the increase, globally. This will pose further threat to the environment both within cities, as well as in rural areas, which, in turn, will lead to further rural-urban migration.

This trend needs to be controlled. Environmental health problems already far exceed the capacities of most cities in the developing countries to adequately manage them. Rural areas should be made more habitable to discourage rural-urban migration.

Pollution abatement technologies are available, albeit at a high cost. They should be made available to cities that are striving to manage their environmental problems, at reasonable cost. Solutions to the traffic and air pollution problems of megacities is a priority need.

Intensive as well as extensive agriculture to feed the ever-increasing populations has led to emergence/re-emergence of diseases which were either controlled or were only present in animals. Excessive use of pesticides, household and industrial chemicals, is creating a new family of endocrine, immune and neural disorders. Children, women, the aged, the undernourished are at high risk. Properly validated assessments are necessary. Very little is known about the synergistic health effect of exposure to mixtures of chemical - chemical, chemical-physical , chemical-biological and physical-biological agents. Even much less is known about their impacts on the nutritionally under-privileged sections of the society. Further assessments of environmental pollution on human health should include these complex issues with a view to protect and promote the well-being of populations.

Global climate change, habitat destruction, loss of biodiversity and increased levels of pollution have resulted in the emergence of 'new' diseases, as well as re-emergence of traditional 'illnesses' such as malaria, dengue, schistosomiasis, cholera, diarrhoea, etc. Resistance of vectors to pesticides and of microbes to antimicrobial agents has further aggravated the situation. The trend needs to be halted by applying stringent environmental controls and by incorporating a health dimension into all development projects. Monitoring of emerging and re-emerging diseases is critical both for preventive actions as well as emerging preparedness.

3. TOXIC CHEMICALS

1. Introduction/Background

Chemicals are essential for continued economic development. Globally, production and trade in Chemicals is measured in billions of dollars. Chemical production or use is a crucial component of virtually every sector of any national economy, and all of humankind in some way come into daily contact with chemicals. Chemicals should be manufactured, imported, exported, processed, transported, distributed in commerce, used and disposed of in an environmentally sound manner and in ways that protect human health and the environment. Exposure of humans and pollution of the environment may arise at all stages in the life-cycle, from chemical production through ultimate disposal.

A great deal remains to be done to ensure environmentally sound management of toxic chemicals. UNCED's Agenda 21, Chapter 19 addresses this need and provided internationally agreed guidance and policies as to how best address the issues in years to come. UNCED also called for collaboration on chemical safety. As a response to this request, a new framework for co-ordination of policies and activities carried out by international organizations (UNEP, ILO, WHO, FAO, UNIDO and OECD) has been established and is named the Inter-Organization Programme for Sound Management of Chemicals (IOMC). Also an Intergovernmental Forum on Chemical Safety (IFCS) was established to facilitate cooperation between governments, international organizations, inter-governmental and non-governmental organizations on aspects of chemical and risk assessment and environmentally sound management of chemicals.

Furthermore, sustainable development requires the global capacity for the sound management of chemicals. National capacities exist within most of the developed countries and usually to a more limited extent in developing countries. One component of building global capacity is to extend the sound management of chemicals to all countries - that is to take steps to ensure that all countries have the required information, expertise, and resources to manage chemicals safely under the conditions of production or use in that country. The other facet of global capacity is ensuring that the necessary global actions are taken to address risks that are not captured by national actions alone. Certain aspects of commerce, use, or environmental release of chemicals require concerted global actions to ensure risks are identified and managed appropriately and are sufficiently reduced. Achieving these goals require the co-ordination and collaboration of countries, inter-governmental organizations and non-governmental organizations.

2. Objectives

The overall objective of all UN bodies involved in chemical management is "*to promote guidance, information and tools for environmentally sound management of chemicals for sustainable development, and thereby help increase and to adopt risk reduction activities as appropriate.*"

In Chapter 19 - Environmentally Sound Management of Toxic Chemicals, UNCED designated objectives within six programme areas for increased national and international efforts. Some of the key objectives of Chapter 19 are:

- Strengthening international risk assessment. Several hundred priority chemicals or groups of chemicals, including major pollutants and contaminants of global significance, should be assessed by the year 2000, using current selection and assessment criteria.

- Producing guidelines for acceptable exposure to a greater number of toxic chemicals, based on peer review and scientific consensus distinguishing between health or environment-based on exposure limits and those relating to socio-economic factors.

- Making available, if feasible by the year 2000, a globally harmonized hazard classification and compatible labelling system, including material safety data sheets and easily understandable symbols.

- Promoting intensified exchange of information on chemical safety, use and emissions among all involved parties.

- Achieving by the year 2000, as feasible, full participation in the implementation of the Prior Informed Consent (PIC) procedure, including possible mandatory applications through legally binding instruments contained in the Amended London Guidelines for the Exchange of Information on Chemicals in International Trade and in the FAO International Code of Conduct on the Distribution and Use of Pesticides, taking into account the experience gained within the PIC procedure.

- Eliminating unacceptable or unreasonable risks and, as far economically feasible, reducing other risks posed by toxic chemicals by employing a broad-based approach involving a wide range of risk reduction options and by taking precautionary measures derived from a broad-based life cycle analysis.

- Promoting introduction, by the year 2000, of national systems for environmentally sound management of chemicals, including legislation, and provisions for implementation and enforcement in all countries.

- Reinforcing national capacities to detect and halt any illegal attempt to introduce toxic and dangerous products into the territory of any state, in contravention of national legislation and relevant international legal instrument.

- Assisting all countries, particularly developing countries, in obtaining all appropriate information concerning illegal traffic in toxic and dangerous products.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 19: "Environmentally sound management of toxic chemicals, including prevention of illegal international traffic in toxic and dangerous products" - **UNEP.**

3. Programmatic Thrusts

To respond to requests from governments that there was an urgent need for improved communications and co-ordination among governments, NGOs and IGOs, and to address many of the hoped-for objectives of a strengthened International Programme on Chemical Safety, called for by UNCED two new international entities have been formed - the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) and the Intergovernmental Forum on Chemical Safety (IFCS). The IFCS, created in Stockholm in April 1994, is a mechanism for cooperation among governments for the promotion of chemical risk assessment and environmentally sound management of chemicals. IOMC was established in 1995 to serve as a mechanism for co-ordinating efforts of international and inter-governmental organizations (UNEP, ILO, FAO, WHO, UNIDO and OECD) in the assessment and management of chemicals. Together, these two mechanisms have established a framework to coordinate and harmonize the efforts of governments, NGOs, and intergovernmental organizations in meeting the objectives of Chapter 19. Although there have certainly been some unfulfilled expectations in addressing the global chemicals agenda, these two mechanisms have demonstrated that, by acting in close cooperation, bodies engaged in chemical safety can be more productive and attain higher quality output, for fewer resources.

3.1 Assessments

- Continue to develop a co-ordinated, step-wise process for the international assessment of existing chemicals and pesticides with maximum sharing of the burden and maximum utility of the assessments. The IFCS target of 200 additional chemical evaluations by 1997 will be met through the activities of IPCS and OECD. The second target of 300 more assessments is to be produced by 2000.

- Continue an assessment process on POP's, which started with the list of 12 substances and assist in the development of science-based criteria and a procedure for identifying additional POPs as candidates for future international action.

- Support Governments, industry and NGOs in collecting and generating data required for risk assessment of high production volume chemicals and other chemicals of concern in the framework of IOMC programmes on testing and assessing existing chemicals. IOMC partners will be co-operating to ensure that efforts in this area are not duplicated and that internationally peer-reviewed national assessments, initial assessments which identify the need for further work on high production volume chemicals and comprehensive assessments on chemicals of concern are used coherently to make the best and most useful information available to countries.

Involved agencies and organizations in the above programmatic thrust include; IAEA, ILO, UNEP, UNIDO, UNITAR, WTO and UN Regional Commissions, IOMC (UNEP, FAO, ILO, WHO, UNIDO and OECD), IPCS (UNEP/ILO/WHO).

3.2 Policy

- Harmonize through the established IOMC Coordinating Group for the Harmonization of the Chemical Classification Systems classification criteria and tests by the year 1997 and hazard communication tools (labelling and data sheets) by the year 2000.

- Elaborate a mechanism, either binding or non binding, to implement a globally harmonized system of chemical classification, at the national and international levels, as currently discussed within the IOMC and the IFCS. Strengthen intergovernmental and inter-agency cooperation in building consensus views on that issue.

- Promote the broadest use of risk assessments performed by both national authorities and international bodies. International standards on Pesticide Residues in Food and Food Additives will continue to be set by the FAO/WHO Codex Alimentarius, on the recommendation of the FAO/WHO Joint Meeting on Pesticide Residues and the Joint Expert Committee on Food Additives.

- Continue developing Pollutant Release and Transfer Registers (PRTRs) and assist countries in implementing national PRTR design projects (UNITAR). Important PRTR-related support services will be further provided by UNEP Chemicals (a homepage on international and national PRTR activities), WHO (a document on emission estimation techniques), UNECE (an emission inventory guide for air pollution), and UNIDO (a database system for PRTR data). Together these activities and services will be able to assist interested countries to design and implement a national PRTR system.

- Continue to provide a basis for the development of international and national standards, e.g. on food additives, food contaminants, veterinary drug residues and pesticide residues through several established international programmes (to date over 1160 chemicals and 260 pesticides have been evaluated).

- Promote environmental guidelines for specific pollutants, as for example the WHO Air Quality Guidelines for Europe which are due in 1997 (second edition).

- Strengthen the response systems to chemical emergencies in countries and regions, and improve access to the sources of information on that emergencies. Support further national systems for emergency preparedness and response, including training of personnel, with the aid of UNEP/APELL programme. Promote a wider recognition at government and industry levels of the importance of accidents prevention, preparedness - response and including these parameters in planning industrial developments.

- Promote the implementation and ratification of ILO convention No. 170 concerning safety in the use of chemicals at work.

Involved agencies and organizations in the above programmatic thrust include: IAEA, ILO, UNEP, UNIDO, UNITAR, WHO, WTO and UN Regional commissions, IOMC (UNEP, FAO, ILO, WHO, UNIDO and OECD), IPCS (UNEP/ILO/WHO).

3.3 Management

- Support (particularly through UNITAR National Profile Support Programmme) countries in preparing National Profiles along the IFCS recommendations. Continue to incorporate into the preparation of those Profiles all concerned parties within and outside of governments.

- Assist countries in establishing Integrated Pest Management in order to reduce reliance on pesticides through participatory training programmes, establishing farmer field schools and training of trainers. Specific actions will include, inter alia:

    - extending experience gained in the FAO Rice IPM programme in Asia to other crops and other countries and regions where non-sustainable crop protection practices are used;

    - cosponsoring, with the World Bank, UNDP and UNEP, of an IPM facility that will use participatory approaches to promote IPM implementation by farmers;

    - raising awareness, developing capabilities to implement programmes and building national capacities that consolidate and institutionalize national policy on the use of pesticides only within the framework of IPM principles and practices.

- Promote information exchange and the co-ordinated delivery to governments and other institutions who need data on toxic chemicals. Provide information on toxic chemicals on CD-ROM, through Internet, and via printed material in a more co-ordinated and complete way. Further build upon the pilot programme of a new Global Information Network on Chemicals, established by Japan.

- Expand UNIDO Regional Network on Pesticides in Asia and the Pacific, called RENPAP into other countries and regions. Establish a similar network for Risk Reduction in Agrochemical Development in AFRO-Arab Countries as based on the successes of RENPAP. Promote UNIDO Guidelines on Integrated Safety in Pesticide Formulation in developing countries aiming at greater awareness to ecotoxicology and environmental monitoring of chemicals of concern in developing countries.

- Maintain a database on CD ROM and disseminate information on prevention, diagnosis and treatment of poisoning of several hundred chemicals, drugs, poisonous plants and animals together with information management software to complement IPCS guidelines on establishment of national poisons information centres, the handbook for poison control for field use and manual on basic analytical techniques.

- Strengthen national capabilities and capacities for managing chemicals in particular through capacity building activities, as for example:

    - training programme on PIC in all regions of the world (UNITAR, UNEP, FAO).

    - extensive trainings in establishing national information systems for managing chemicals information, on the national, sub-regional and regional level (UNEP).

    - action programmes aimed at strengthening factory inspections in dealing with chemical safety issues, as well as promoting national co-ordination in this area (ILO).

    - support preparations of the comprehensive National Profiles to assess countries chemicals management infrastructure.

- Assist countries in implementing Chapter 19 in an integrated way (pilot programme of UNITAR and IOMC).

  - further develop cleaner production centres (UNIDO).

  - advanced chemical safety training programme through a North South cooperation as part of Global Network for Safety in Chemical Production (GLONESA) (IUPAC and UNESCO).

- Facilitate funding to address chemical contaminants as they pertain to protection of international waters (GEF).

- Promote the implementation and ratification of ILO convention No. 174 concerning the Prevention of Major Industrial Accidents.

Involved agencies and organizations in the above programmatic thrust include; IAEA, ILO, UNEP, UNIDO, UNITAR, WHO and UN Regional Commissions, IPCS (UNEP/ILO/WHO) and IOMC (UNEP, FAO, ILO, WHO, UNIDO and OECD).

4. Emerging Issues

The question of obsolete pesticide stocks is gaining more importance. FAO has already undertaken a project on prevention and disposal of obsolete pesticide stocks, including developing methods on elimination of those substances. This issue will have to be given a priority consideration in the coming years.

4. MANAGEMENT OF HAZARDOUS WASTES

1. Introduction

Hazardous waste management is one of the issues at the top of the environmental agenda. Worldwide awareness of the issue has led to international, national and local initiatives, involving both the public and the private sectors. While improvement in waste management has been observed in some places, notably developed countries, the expansion of industrial activities without effective environmental controls in other countries has led to a continuation of unsatisfactory conditions.

Most of the attention has focused on hazardous wastes coming from industrial processes. Hazardous residues from commerce, agriculture, hospital and domestic wastes have not been sufficiently addressed.

Many dump sites of hazardous wastes, resulting from improper waste disposal, are threatening human health and the environment, with soil contamination as well as the related ground water contamination beginning to appear as a new environmental issue. The costs associated with the clean-up of these sites is enormous.

Off-site recycling is widely utilized to achieve waste minimization, but ill-defined and ill-specified exports of wastes destined for recovery open the door to illegal traffic. Such exports from OECD to non-OECD countries will be banned after 1997.

An increasing number of countries worldwide have adopted or are adopting regulatory frameworks for hazardous waste management including the control of transfrontier movements. However, even when they exist, in particular in developing countries, these regulations are not well enforced.

Recent decisions adopted by the parties to the Basel Convention will have far reaching consequences on minimizing the transboundary movement of hazardous waste, including those for recycling and recovery. Even though more and more countries are establishing hazardous waste treatment facilities, the capacities in place in many countries are not sufficient to respond to current needs.

Very few countries have developed the economic instruments and set up the institutions which are necessary to define and implement their hazardous waste policies and provide the necessary incentives for industry and consumers to shift towards cleaner processes and products.

There is an increased worldwide awareness of the need to adopt a preventive approach, through cleaner production, to achieve waste minimization, and more broadly, pollution prevention and the efficient use of raw materials. Environmental management tools such as auditing, life cycle analysis and reporting are now available to promote such an integrated approach. However, progress has been made mainly in large industries while small and medium-sized enterprises have not yet addressed cleaner production. The diffusion and widespread use of cleaner production is being limited by many factors, including: inadequate government policies; lack of capital for major investments, even though they have a good return; resistance to change; lack of expertise and skills to make the change; insufficient dissemination of information on commercially available cleaner technologies and products; and, insufficient awareness of the economic benefits associates with the use of cleaner technologies.

2. Objectives

The role of the UN agencies is critical in:

- Helping to increase the understanding of the hazardous waste issue and its interlinkages with other problems and, more generally, in raising awareness;

- Identifying solutions to prevent waste at source, to recycle, and to adequately manage it;

- Providing information, advice and support to the Basel Convention.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 20: "Environmentally sound management of hazardous wastes, including prevention of illegal international traffic in hazardous wastes" - **UNEP**.

3. Major Programmatic Thrusts

The UN system provides a focus for:

- Discussion, debate and coordination of hazardous waste management and cleaner production activities;

- Information, guidance documents and training support to enable decision-makers in governments and in other part of society to make environmentally sound decisions;

- Intergovernmental fora for the negotiation and implementation of instruments to assist countries with policies and measures for the management of hazardous waste and the control of transboundary movements of wastes.

It is now urgent to move from awareness building to effective implementation of Agenda 21 recommendations.

3.1 Assessment

Continued monitoring is needed to assess the extent of the hazardous waste situation worldwide, and the means used by countries to respond. There is also an ongoing need to identify appropriate available technologies to reduce waste generation (cleaner production technologies), and to dispose of residual wastes in an environmentally sound manner.

Some of the above information is available through the reporting requirements under the Basel Convention. Other data can be collected through complementary programmes such as the Global Waste Survey of IMO. There is also an international initiative to promote the concept of Pollution Release and Transfer Registers.

Involved agencies and organizations in the above programmatic thrust include: IAEA, ILO, IMO, UNEP, UNITAR, WHO, and UN Regional Commissions, as well as the Secretariats of the Basel and London Conventions.

3.2. Policy

The major policy change needed is to reorient development and control programmes to better implement the "prevention" principles" of the cleaner production approach.

It would also be useful to refocus waste control programmes to achieve a better balance between management and technology activities. Source control and recycling, for example, need management leadership to be effective.

- Promote environmental management systems (EMS) including ISO 14001, and waste control approaches.

- Encourage governments to introduce integrated pollution and waste control approaches.

- Encourage governments to strengthen requirements for waste operators to use appropriate assessment, monitoring and audit procedures as a pre-condition for permits

- Promote more effective life-cycle management of certain products and waste by both governments and private sector.

- Encourage acceptance that secondary raw materials in industry are a waste management issue as well as a resource and trade issue.

- Continue facilitating preparation of a convention on the safety of management of radioactive waste and on the safety of management of spent fuel.

Involved agencies and organizations in the above programmatic thrusts include: IAEA, ILO, IMO, UNCTAD, UNDP, UNEP, UNIDO, WHO, World Bank and Regional Commissions and others.

3. Management

The earlier reliance on technological solutions to the waste problem has not always led to a successful reduction in environmental impacts. Many aspects of the waste problem are more amenable to management solutions, including the correct use of appropriate environmental tools. Recent evolution of such tools, and the development of formal environmental management systems (EMS) now gives more options for cost-effective solutions to waste problems.

The UN will:

- Publish technical informative and awareness bulletins.

- Organize meetings of specialists and administrators.

- Promote training and capacity building projects.

- Strengthen operations of UN sponsored centres and institutes.

- Encourage high level meetings of national decision-makers.

- Assist in improving application of skills and instruments for cleaner production.

Involved agencies and organizations in the above programmatic thrusts include IAEA, ILO, IMO, UNCTAD, UNDP, UNEP, UNIDO, WHO, World Bank and UN Regional Commissions and others.

4. Emerging Issues

Trade liberalization has many implications for waste management and cleaner production. The transfer of wastes, and of the industrial production units that generate them, is becoming easier at national borders. At the same time government services are down-sizing, making effective monitoring of transfer more difficult. Conversely, information technology gives greater hope of automated tracking of movement of wastes.

The introduction of EMS, and its standardization through ISO 14001, will undoubtedly help governments separate responsible companies from their less-conscientious peers. EMS promises to be a powerful tools for identifying "environmentally sound operations". Although it does not in itself guarantee high performance, it indicates that the capability to give high performance is there.

Recycling, and trade in secondary raw materials (i.e. wastes) will become the focus of much more attention worldwide. Improvements are needed on all fronts - technological, regulatory, management - but without a doubt, the market instability of the wastes and refined products will remain a serious challenge for public policy and for control programmes (including "prevention").

Finally building national capacities at a time of declining government resources and administrative down-sizing will continue to retard the introduction of effective strategies at a national level.

CHAPTER IV:

ENVIRONMENTAL INFORMATION & ASSESSMENT

1. ENVIRONMENTAL ASSESSMENT

2. ENVIRONMENTAL INFORMATION FOR DECISION-MAKING

1. ENVIRONMENTAL ASSESSMENT

1. Introduction/Background

Environmental assessments are needed to support environmental policy setting and promoting sustainable development at all levels; these assessments must be responsive both to client needs and to environmental concerns. The significant messages which arise from assessments must be conveyed to the decision-makers in an unambiguous and understandable manner, through accurate and timely reporting. Assessments and reports are based on underlying data and information. The availability and quality of required data, the reliability of the methods used to compile, relate and analyze those data, and the logic of the overall assessment frameworks are all crucial determinants of the confidence that can be placed in the resulting assessments and reports. These underlying components and processes are therefore essential parts of a comprehensive assessment programme within the UN. Adequate facilities and levels of expertise are needed for all the assessment and reporting tasks required. Therefore a comprehensive assessment programme will also include targeted capacity building.

Assessment and information has been a major task of the UN community, in particular UNEP, since Stockholm and the UN Conference on the Human Environment in 1972. After the UN Conference on Environment and Development in 1992, Agenda 21 called for improved access to environmental data and information and enhanced capacity of countries to use information for decision making. Agenda 21 (Ch 38.22) also requires UN agencies, including UNEP, to give high priority to environmental assessment. The assessment programmes of the UN should also make direct contributions to other activities called for under Agenda 21 including improvement of methods of data assessment and analysis (40.9), production of information usable for decision-making (40.22) and the development of indicators of sustainable development (40.6).

2. Objectives

The ultimate objective of assessment and information activities in the UN system is to provide the world community with improved access to meaningful environmental data and information for informed decision making and action planning.

- keeping under review the state of the world's environment;
- providing early warning of environmental threats;
- improving access to information for environmental decision making and policy-setting and;
- enhancing developing countries' capabilities to use information.

The task manager under IACSD for the relevant Chapter of Agenda 21 is:
- Chapter 40: "Information for decision-making" - **DPCSD and UNEP.**

3. Programmatic Thrusts

3.1 Assessment

Identification of the scope of activities needed to address the needs of state of the environment reporting, early warning and capacity building of countries, in particular, developing countries and countries with economies in transition, require further review and coordinated enhancement of on-going activities of the following components.

- *Identify needs and gaps*: The assessment programmes of the UN need to keep under review the needs of reporting on the state of the world's environment and providing early warning of environmental threats. Such reviews should asses availability and help provide data and information relevant to

assessments for decision-making. The information includes environmental statistical data, particularly for developing countries, availability and utility of statistical methodologies, and validity of such data in the context of environmental reporting and early warning.

- *Continuously review the UN system's activities*: Continuous review of UN system agencies' activities, through mechanisms such as the System-wide Earthwatch, is required to avoid duplication and to ensure highest synergy in view of the fact that a large number of UN system agencies are implementing a variety of activities in this field.

At the programme level, activities related to state of the environment reporting should include:

- *State of the Environment Reporting*: Produce global state of the environment reports, such as UNEP's Global Environment Outlook, highlighting regional environmental priorities and concerns, looking into the future and analyzing interlinkages between environment and development for a selected number of environmental areas.

- *Sectoral assessments*: Produce sectoral assessments (such as the GEMS programme) including: global freshwater assessment, assessment on POP's, assessment on land based sources of pollution, assessment of air quality in major cities; arctic and Antarctic assessments.

Involved agencies and organizations in the above programmatic thrust include: DESIPA, DPCSD, FAO, IAEA, UNDP, UNEP, UNESCO, UNITAR, WHO, WMO, UN Regional Commissions, Regional Development Banks.

3.2 Policy Promotion

There is an urgent need to co-ordinate, harmonise and integrate observing, assessment and reporting activities across the UN system in order to provide environmental and appropriate socio-economic information for national and international decision-making on sustainable development and provide early warning of emerging problems requiring international action.

- Share timely information by UN agencies on the pressures on, status of and trends in key global resources, variables and processes in both natural and human systems and on the response to problems in these areas.

- Establish global participatory assessment systems, involving networks of scientific assessment collaborating institutes and regional policy consultations as part of the production process for global and regional state of the environment reporting. This will add to the technical and policy nexus for state of the environment reporting, particularly on the global and regional scales.

- Further develop statistical concepts and methods, collection, compilation and dissemination of international statistics, and coordinate international statistical programmes.

- Enhance coordination of UN agencies' activities through the analysis of the comparative strengths of UN system agencies to ensure the highest synergy from coordination of their activities while taking into account existing participatory mechanism and achievements. These includes the UN system-wide Earthwatch, IACSD, and the Inter-agency Task Force on Environment Statistics.

At the programme level, activities related to state of the environment reporting should include:

- *Indicators of sustainable development*: Develop a coherent set of indicators to support policy setting, including a core set of indicators of sustainable development and Land Quality Indicators, by UN system agencies.

- *Statistics:* Publish compendiums of environmental indicators and indicators for sustainable development and operational manuals for environmental statistics and indicators and environmental accounting.

Involved agencies and organizations in the above programmatic thrust include: DESIPA, DPCSD, FAO, IAEA, UNDP, UNEP, UNESCO, UNITAR, WHO, WMO, UN Regional Commissions, Regional Development Banks.

3.3 Management

As urgent actions in this field, a variety of capacity building activities should be undertaken by UN system agencies. These should include the provision of technical assistance to developing countries in particular, for improving their capability in generating and using environmental information and statistics for decision-making and improving their access to such information. All of these assist in bridging the enormous information gaps that exist in monitoring and assessment of the environment at the national, regional and global levels (see IV - 2, Environmental Information for Decision Making).

Involved agencies and organizations in the above programmatic thrust include: DESIPA, DPCSD, FAO, IAEA, UNDP, UNEP, UNESCO, UNITAR, WHO, WMO, UN Regional Commissions, Regional Development Banks.

4. Emerging Issues

There are a host of new issues and problems emerging which will need comprehensive assessments by the UN. These include problems associated with the impact of persistent organic pollutants, management and disposal of hazardous wastes, new and re-emerging health issues such as ebola and cholera, ever-expanding urban centres and the increase in urban environmental problems such as water and air pollution and their health implications.

2. ENVIRONMENTAL INFORMATION FOR DECISION-MAKING

1. Introduction/Background

Agenda 21 stressed the need to improve access to environmental data and information world-wide. The UN system must ensure that the world community has unfettered and coordinated access to its information resources, as well as to environmental information in general, if it is to facilitate the development of meaningful assessments leading to the formulation of appropriate policies, decisions and action plans for environmentally sustainable development.

The availability and quality of the required data, the reliability of the methods used to compile, relate and analyze those data, and the logic of the overall assessment frameworks are all crucial determinants of the confidence that can be placed in the resulting assessments and reports. The development of environmental information networks and appropriate capacity building are a key requirement to enhancing national and regional capabilities to produce data, assessments and policy relevant reports for sustainable development planning and management.

2. Objectives

The role of the UN system, amongst others, is to address the gap which exists between the developed and developing world in the availability and accessibility of environmental data. This gap seriously impairs the capacities of countries to make informed decisions concerning the sustainable use of natural resources. The UN should strive to promote and address the general lack of capacity, particularly in developing countries and countries with economies in transition. Major objectives are:

- Strengthening national and international mechanisms for information processing and exchange, and related technical assistance, to ensure effective and equitable availability of information generated at local, provincial, national and international levels.
- Enhancing access to unique sources of data and information and leverage the filling of information gaps.
- Enhancing and improving institutional and system frameworks to address the increasing gap between the developed and developing world in the availability, quality, coherence, standardization and accessibility of environmental data.
- Enhancing and strengthening capacities of countries to make informed decisions concerning the sustainable use of natural resources, with particular reference to: efficient cross-sectoral handling of data; analytical methods, technology and processes to transform data into information of use for multi-sectoral and cumulative environmental impact assessment; effective procedures and infrastructures to disseminate information to sub-national, national and regional users.
- Improving coordination among environmental, demographic, social and developmental data and information activities.
- Harmonising environmental information management and delivery mechanisms.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 40: "Information for decision-making" - **DPCSD and UNEP** as far as Earthwatch is concerned.

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3. Programmatic Thrusts

Environmental Information for Decision-making, in particular environmental and natural resources information networking and related capacity building, should be carried out with the ultimate aim of enabling comprehensive region based environmental data collection, dissemination and assessment. The number of data and information networking programmes in all sectors undertaken by the UN and other multi and bilateral programmes is high. These programmes must work together and link to each other to avoid the danger of duplication of activities and superfluous use of scarce resources. It is important for UN programmes dealing with Environmental Information for Decision-Making to forge strong cooperative links with each other and with Environmental Assessment activities throughout the UN system.

3.1 Assessment

Full understanding of the scope of activities needed to address the issue of data availability, access and related capacity needs require further review and coordinated enhancement of on-going activities.

- Prepare an inventory of existing government and non-government organisational networks with operational linkages to national agencies;
- Assess institutional networking, data-set and database management capacity needs in developing and countries with economies in transition;
- Assess electronic network connectivity needs in least developed, developing and countries with economies in transition;
- Investigate and compare analytical and visualisation methods and technologies suitable for conveying complex and multi-sectoral issues to disparate audiences.
- Strive to harmonize environmental measurements, indicators and ecological system characterisations, necessary for enhancing common understanding and assessments of region-wide and global aggregations.

Involved agencies and organizations in the above programmatic thrust include: DPCSD, FAO, UNDP, UNEP, UNESCO, UNITAR, WHO, WMO, UN Regional Commissions, Regional Development Banks.

3.2 Policy Promotion

With a view to ensuring highest synergy of activities of the UN system, the following actions are required.

- Establish a global framework for environmental information networks at regional levels to help tailor environmental information needs for policy formulation and as a basis for capacity building.
- Promote a harmonised Meta-Data Directory system which can be used by individual agencies but can readily be adapted, translated or incorporated in electronic networks.
- Promote widespread adoption of linked but distributed database custodian systems where each organisation is responsible for collecting and posting data within its areas of responsibility, coupled with a common access and search capacity to allow easy connection to information across the system.

Involved agencies and organizations in these activities include: DPCSD, FAO, ITU, UNDP, UNEP, UNESCO, ACC/ISCC, UN Regional Commissions, Regional Development Banks.

3.3 Management

In line with the UN system-wide policy in line with the 3-2 above, the following actions will be implemented.

- Develop environmental information networking activities and agreements related to the management and exchange of data and information for environmental assessment and reporting.

- Coordinate and mobilise institutional data and information assets of the UN agencies and partners for assessments related to environment and development issues of international significance;

- Ensure delivery of timely information to decision-makers to formulate national and international policy and produce action plans;

- Formulate projects and mobilise resources to address shortfalls in capacities at national and sub-regional levels in developing and countries with economies in transition;

- Provide and enhance access to an expanding knowledge base of data, information and institutional and individual expertise to be used in formulating environmental management decisions, policies and action plans.

- Develop environmental information systems, through the coordination and improvement of telecommunications services (including utilisation of the internet) and the exchange of environmental information products of UN System agencies.

- Facilitate creation of a UN compatible agency-wide system for the management, dissemination and exchange of environmental information products (information system architecture, rules of interpretation);

- Ensure global access to the environmental agency products of the UN and associated partners regardless of the potential limitations of the end user technology.

Involved agencies and organizations in these activities include: DPCSD, FAO, ITU, UNDP, UNEP (particularly the information elements of the GRID, Infoterra and ENRIN programme elements), UNESCO, ACC/ISCC Secretariat, UN Regional Commissions, Regional Development Banks.

4. Emerging Issues

In spite of the efforts of various actors both within and outside the UN system the gap between developing, countries with economies in transition and developed countries in the availability, quality, coherence, standardisation and accessibility of environmental data continues to increase. This will continue to impair the capacities of countries in bringing the best available information to bear in solving environmental issues.

The dependence of developing and countries with economies in transition on the data and information sources of the developed world will continue to cause concern and suspicion. It is essential that the former nations and regions rapidly develop their own assessment and reporting facilities. This requires good monitoring, data compilation, database management and analytical facilities so that they can contribute to international assessments as full and equal members.

The question of too much information in one part of the globe and too little in another will become increasingly acute. It is not just a matter of connectivity but ability to filter and use the information.

The problem of creating the appropriate information filters and making data and information on serious issues palatable to policy makers and the public will continue. Information overload, easy promotion of dissenting opinions, can lead to decision paralysis with sometimes serious consequences.

CHAPTER V:

GLOBALIZATION

1. ENVIRONMENT AND ECONOMICS
2. TRADE AND ENVIRONMENT
3. ENVIRONMENTAL LAW
4. EDUCATION AND PUBLIC AWARENESS

1. ENVIRONMENT AND ECONOMICS

1. Introduction

The last two decades have experienced an increased awareness of the intricate relationship between environment and economics. It has become evident that in order to achieve sustainable development, environmental, and social considerations need to be integrated with physical and economic planning. This was recognized by the United Nations Conference on Environment and Development (UNCED) which recommended governments to integrate ecological factors into economic priorities as a prerequisite to sustainable development. Since UNCED, considerable work and progress has been made to define links between environmental degradation and the depletion of natural resources and the underlying market and policy failures.

However, the gap between conceptual analysis and practical application of environmental economics remains wide. Considerable methodological and technical challenges remain: using effectively environmental economics as a tool to integrate environmental and socioeconomic considerations in development planning and decision-making; assessing and evaluating the extent of environmental degradation and depletion of natural resources and their socioeconomic implications; identifying appropriate management tools and policy options appropriate to the specific needs of different countries; internalizing environmental externalities and correcting market prices to reflect environmental and social considerations; increasing the effectiveness of environmental impact assessment as a development planning and decision-making tool; and the further development and enhancement of technical capabilities, particularly, in developing countries and countries with economies in transition to meet the changing requirements and demands of the globalization of the world.

2. Objectives

The objectives of the UN system in the field of environmental economics are:

- Enhancing the capacity of countries, particularly developing countries and countries with economies in transition in integrating environmental considerations in development planning and decision-making;
- Furthering develop and facilitating the application of environmental economic tools: valuation of environmental and natural resources, natural resource accounting, economic instruments, and environmental impact assessment;
- Promoting the use of market-based incentives and mechanisms, management and regulatory tools and policies to internalize environmental externalities;

The task managers under IACSD for the relevant chapter of Agenda 21 are:
- Chapter 2: "International cooperation to accelerate sustainable development in developing countries and related domestic policies" - **UNCTAD**; and
- Chapter 8: "Integrated environment and development in decision-making" - **DPCSD.**

3. Major Programmatic Thrusts

The systemwide programme activities for meeting the objectives and priorities for implementing the *the programme in the area of environment and economics* will include addressing a range of policy and market failures at the national and international level. In order to effectively implement the programme, activities will have to involve practitioners from various disciplines, planners, and policy and decision makers.

3.1 Assessment

The main focus of the systemwide programme will be on the application of methodologies and tools for integrating environment in development and decision-making.

- Continue to assess the extent to which environmental economic tools are being used in different country contexts, constraints to their use, including constraints at the national and international level. Information should be made available to countries on the experience in introducing environmental economic instruments.

- Assess the negative impacts of adverse international relations on the environment. This includes: international trade, debt, conditionality of aid, consumption and production patterns and lifestyles, structural adjustment programmes and bilateral aid programmes.

- Disseminate information to countries on the experience in introducing environmental economic instruments, including success and failures.

Involved agencies and organizations in the above programmatic thrust include: DESIPA, DPCSD, FAO, IAEA, ILO, UNCTAD, UNDP, UNEP, World Bank; OECD, Regional Development Banks, International Association for Impact Assessment (IAIA), Regional and sub-regional organizations, Environment Protection Agency of Australia, IUCN.

3.2 Policy

The implementation of sustainable development programmes involves a strong and genuine commitment on the part of both developed countries, developing countries and countries with economies in transition to need and necessity of adopting policies which help attain this objective. It will require increased regional and international cooperation, and involve ensuring complementarity and consistency of programmes promoted by international organizations as well as non-governmental organizations. It will necessitate a major shift in programmes and policies advocated by development assistance organizations, multilateral institutions and national government departments.

- Promote the understanding of the implications of environmental standards, policies and agreements for developed and developing countries and countries with economies in transition.

- Enhance understanding of developed and developing countries and countries with economies in transition to the costs and benefits of adopting sound environmental management and sustainable development projects, programmes, and policies.

- Promote the understanding of the complementarity between environmental agreements and policies and development plans and policies.

- Contribute to international efforts leading to the promotion and application of environmental economic instruments as tools for integrating physical, social, environmental and economic aspects in development planning at the project, programme and policy levels.

- Assist Governments in assessing the impacts of existing policies, including property rights systems and market-based incentives and trade regimes on the environment.

- Assist Governments in assessing the impacts of implementing structural adjustment programmes which fail to incorporate environmental and social considerations in their core programme.

- Support policies which contribute to the integration of environmental, social and economic considerations in development planning and decision-making.

- Promote the use of System for Integrated Environmental and Economic Accounting (SEEA) as developed by the UN Statistical Division.

- **Build on and make maximum use of indigenous knowledge and experience through the involvement of local institutions and individuals in the development and implementation of projects, programmes, and strategies;**

- **Ensure complimentarity and coordination of activities between various United Nations bodies and other international and regional organizations, in order to select priority activities where those organizations have comparative advatage.**

- **Further develop a network of experts and institutions to provide guidance in the implementation of the programme.**

Involved agencies and organizations in the above programmatic thrust include: DESIPA, FAO, IAEA, ILO, UNCTAD, UNDP, UNEP, WTO, World Bank; OECD, Regional Development banks, International Association for Impact Assessment (IAIA) & regional and sub-regional organizations and committees, IUCN

3.3 Management

The systemwide strategy will design and assist in implementing management systems which take full account and consideration of the social and environmental considerations together with economic in development planning and decision-making. Proposed management plans will have to take into account short and long-term implications as well as implications at the national and international level.

- Design and support policies aimed at restructuring national policies and programmes which help attain sustainable development objectives.

- Assist Governments in designing and implementing sustainable development programmes, taking into account the priorities and specific needs of countries.

- Assist Governments in enhancing their institutional and technical capabilities and in developing and implementing their sustainable development programmes.

- Assist Government in introducing and adopting integrated environmental and economic accounting system to reflect the depletion and degradation of environmental and natural resources providing policy and decision makers with a true indicator of development.

- Assist Governments in designing and adopting policies which promotes the integration of environmental and social considerations at the policy, programme as well as the project level.

- Identify actions required as well as institutional, human and financial resource requirements to implement sustainable development programmes;

- Enhance the use of market-based incentives as a mechanisms to internalize social and environmental externalities.

Involved agencies and organizations in the above programmatic thrust include: IAEA, ILO, UNDP, UNEP, World Bank, OECD, UN Regional Commissions, Regional Development Banks, International Association for Impact Assessment (IAIA) & regional and sub-regional organizations and committees, Environment Protection Agency of Australia, IUCN.

4. Emerging issues

For some time, policy makers have grappled with identifying the complex links between international economic relations, economic development and environmental degradation. An unfavourable international economic climate with respect to terms of international trade, conditionality of aid, commodity and agricultural pricing, transnational investment, the debt crises facing developing countries and countries with economies in transition, mounting population pressures and regional conflicts, has resulted in anomalies in consumption and production patterns, and

in a decline in living standards of the poorest segments of the world's population. During the 1980s, economic growth has been confined to those countries which already consumed an inordinate share of the world's resources. Economic inequalities have increased, extravagant lifestyles in developed countries continue to stretch the capacity of the biosphere to provide adequate resources and assimilate wastes.

Prevailing international economic relations make it difficult for most developing countries and countries with economies in transition to allocate adequate investment resources, or introduce the necessary policy adjustment measures required to build sustainable development. To enable developing countries and countries with economies in transition to move from economic stagnation to accelerated and sustainable development; adverse international economic relations have to be addressed within the context of sustained development.

Environmental destruction in developing countries and countries with economies in transition cannot be reversed and prevented without challenging the external and internal economic and political pressures that underlie it; from unequal land distribution and property rights, to international debt and unfair trade. Government policies, business interests and unequal world economy, have been the key agents disrupting the workings of the earth, and this is what UNCED has set out to remedy. That remedy lies primarily in the globality of issues; global partnership, fair and just international economic and environmental cooperation, the reduction of the outflow of financial resources from the south to the North, together with unimpeded transfer of sound technology. Efforts at the global level towards environmental protection are still inadequate to counter the mounting threats to the ecology and recurring environmental crises. The continued absence of an enabling international economic climate for sustainable development leads to economic stagnation, which subsequently curbs these efforts. It is essential to reinstate actions by governments at all levels, the non-official sector and the civil society and call for wide-ranging international cooperation for achieving the goal of sustainable development through capacity building.

2. TRADE AND ENVIRONMENT

1. Introduction

Since 1992 there has been a new realization for the need for policy co-ordination, integration and synergy. The very concept of sustainable development that is the context in which we operate calls for environmental responsibility and care, social equity and the need for economic development. It does not follow automatically, however, that environmental policy will directly address poverty eradication, or that trade liberalization will automatically promote greater environmental management, or that more sustainable consumption patterns will result in trade benefits for developing countries.

In many ways trade liberalization and sustainable development are complementary and can reflect win-win situation, if they are properly reconciled through appropriate integrated policy. There are many trade policy changes that would benefit the environment, and environmental policy changes that would help to secure the benefits of liberalized trade. There are a diversity of environmental responses to the implementation of trade policies, in terms of growth effects, specialization effects, consumption effects and resource allocation effects. The interlinkages between trade and environmental policy are complex and need to be examined in order to promote policy responses and coordination of environment and trade policy for sustainable development.

2. Objectives

The overall objective is to promote "mutually supportive trade and environment policy" from an environmental perspective.

Specific Objectives

- Supporting international efforts leading to the integration of environmental considerations in macro-economic (trade-related) policies and agreements and addressing issues of constraints and implications in competitiveness, through the promotion and facilitation of dialogue between trade and environmental communities on all issues relating to trade and environment matters.

- Providing technical assistance to developing countries and countries with economies in transition in identifying and analyzing links between trade and environmental policies and agreements, through the development of capacity building, training, education and other activities.

- Synergizing mutually supportive trade and environment policy and international agreements through the development and application of methodologies to analyze reciprocal impacts and constraints.

The task managers under IACSD for the relevant chapter of Agenda 21 are:
- Chapter 2: "International cooperation to accelerate sustainable development in developing countries and related domestic policies" - **UNCTAD**; and
- Chapter 8: "Integrated environment and development in decision-making" - **DPCSD.**

3. Programmatic Thrusts

The system-wide programme activities for achieving these objectives consist of first building knowledge in the environmental community of the trade community, its rules, objectives, etc, and vice versa and participating in policy formulation on both sides to promote consensus and unity of purpose toward sustainable development. Secondly, activities are aimed to strengthen the ability of the developing countries, particularly from the environmental side, to participate in trade and environmental debates. Therefore, the activities should concentrate on promoting dialogue, bringing substantive strength to the debates through the provision of technical input such as assessment and analysis of key issues, and capacity building particularly in developing countries in all areas relating to environment and trade.

3.1 Assessment

It is important to explore fully the role, function and efficacy of trade measures and other policy instruments in Multilateral Environmental Agreements (MEAs). It is necessary to look at other expressions of environmental policy and how they can impact on trade opportunities, and of course also at how changes in trade policy and developments of regional and global trade agreements can impact upon the environment. An example is to look at how changes in consumption patterns in developed countries impact upon dependant supplier developing countries, and what their possible responses might be in terms of sustainable development.

- Develop integrated assessment methodologies which analyze environmental impacts of selected trade and macro-economic policies;
- Assess the negative impacts of adverse international policy on the environment.
- Develop integrated and harmonized assessment methodologies that analyze trade impacts of environmental policies and agreements.

Organizations and agencies involved in this programmatic thrust include: DPCSD, UNDP, UNEP, World Bank; CIEL, FIELD, OECD, WTO, Regional Development Banks and other regional and sub-regional organizations, IUCN.

3.2 Policy

The promotion of mutual supportive trade and environment policies involves a strong and genuine commitment on part of both developed countries, developing countries and countries with economies in transition and the willingness to adopting policies which help attain this objective. It will require increased regional cooperation and consultation and involve ensuring complementarity and consistency of programmes promoted by international organizations and NGOs.

- Strengthen dialogue between the environment and trade communities and between NGOs.
- Promote the understanding of the complementarity between environmental agreements and policies and trade agreements.
- Assist governments in assessing the impacts of existing environmental policies on trade.
- Assist governments in assessing the environmental impacts of trade policies and agreements.
- Support governments to develop appropriate response strategies to counter environmental impacts of trade agreements and policies.
- Support policies which contribute to the integration of environmental, social and economic considerations in development planning and decision making.
- Ensure complimentary and coordination of activities between of various UN organizations.
- Develop a network of experts and institutions which can provide guidance in the implementation of UNEP's programme on environment and trade.

Organizations and Agencies involved in this programmatic thrust include: DPCSD, UNDP, UNEP, World Bank, WTO, OECD, Regional Development Banks and other regional and sub-regional organizations, IPF, IUCN, WWF, CIEL, FIELD and selected NGOs from developing countries.

3.3 Management

The system-wide strategy will design and assist in implementing environmental policies which take full account of the social and economic considerations, including issues related to the multilateral trading system. Proposed management systems will have to take into account short and long term implications of trade and environment policies as well as social and economic consideration.

- Assist governments to enhance their institutional and technical capabilities to develop and implement sustainable development programmes in the area of environment and trade.

- Assist governments to introduce and adopt an integrated environment and trade policy.

- Identify actions required to implement coherent trade and environment strategies within the context of sustainable development.

Organizations and Agencies to be involved in this programmatic thrust include: DPCSD, UNDP, UNEP, World Bank, WTO, OECD, Regional Development Banks and other regional and subregional organizations, IPF, IUCN, WWF, CIEL, FIELD and selected NGOs from developing countries.

4. Emerging Issues

The globalization of trade, monetary and fiscal policies, capital markets and investment patterns is reshaping economic structures, factors of production, economies of scale and other considerations. Simultaneously, national and international responses to accelerating environmental depletion and degradation continue to strengthen. International consensus exists on the need to ensure that structural changes underway in the international economic order. Considerable empirical, economic, legal and environmental assessment challenges remain and need to be addressed in the context of delineating the ecological implications of economic globalization.

3. ENVIRONMENTAL LAW

1. Introduction

Law plays a critical role in ensuring sound environmental management, including the wise use of natural resources and the prevention of environmental pollution or degradation. Already one of the fastest growing types of law, environmental law has been given new impetus by Agenda 21 as a tool for achieving sustainable development. At the international level, environmental law has become an important vehicle for building and consolidating international consensus on priority environmental and developmental issues. At the national level, environmental law is a key instrument for translating sustainable development policies into action.

Prompted by an increasing number of legal instruments in the field of environment, the UN system now recognizes the need to better balance its efforts to (1) develop new law and (2) bring about the effective implementation of existing law. This is reflected in a growing emphasis on the processes and procedures required to assure sound environmental management.

During 1996-97, the UN system will take stock of its overall organizational structure and the implementation status of Agenda 21 as well as UNEP's Programme for the Development and Periodic Review of Environmental Law for the 1990s (Montevideo Programme II). This stocktaking exercise should result in the reaffirmation of certain elements of the environmental law programme and the redirection of others.

2. Objectives

The UN's environmental law programme has three broad objectives of equal weight:

- Establishing and implementing coherent global and regional legal regimes which address major environmental issues in the context of sustainable development.

  In this context, the UN works to develop new environmental law concepts and legal instruments, in particular as they relate to the goals of sustainable development. It also seeks to identify mechanisms for effective implementation of and compliance with such legal regimes. The coordination of environmental convention secretariats is becoming increasingly important with the growing number and complexity of environmental conventions.

- Increasing the effectiveness of national environmental policies, legislation and institutions in developing countries and countries with economies in transition.

  Under the rubric of technical assistance provided in response to government request, the UN system helps countries review their existing legal/institutional regimes, identify weaknesses in those systems and draft legislation to strengthen national systems for environmental management. Increasing emphasis is being placed on assistance to countries in the national implementation of international environmental conventions.

- Building national capacity in the field of environmental law and administration.

  Through training programmes, education and the dissemination of information, the UN system fosters the development of national expertise in environmental law. Skilled and knowledgeable individuals in developing countries and countries with economies in transition then can assume responsibility for designing and managing country-specific environmental regimes. They further can participate more effectively in the negotiation and implementation of international environmental regimes.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 39: "International legal instruments and mechanisms" - DPCSD.

3. Major Programmatic thrusts

The UN's current environmental law programme is guided by Agenda 21 and policy documents such as UNEP's Montevideo Programme for the Development and Periodic Review of Environmental Law. Within this framework, the UN system focuses its environmental law programme on:

3.1 Assessment

Regular assessment of the adequacy of existing international instruments and consideration of the need for modifications in different forms, including protocols and new instruments.

- At government request, assist countries in assessing their legislative and institutional needs in the field of environment;
- At government request, assist countries in assessing their obligations under international environmental agreements, the extent to which they have implemented or how best to implement those obligations at the national level and the benefits of participating in any additional agreements;

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, ILO, IMO, UNCPCJD, UNCTAD, UNDP, UNEP, UN/OLA, UNIDO, UNITAR, UNU, World Bank, WTO, UN Regional Commissions, the Convention Secretariats, as well as the Regional Development Banks and regional/country offices of UN bodies.

3.2 Policy

Establishment and strengthening of international legal regimes for the environmentally sound management of the atmosphere, freshwater and marine resources, soils and land resources, forests, biodiversity, environmentally sensitive or culturally significant areas, hazardous substances/wastes and human settlements:

- Further sustainable development through an emphasis on legislative policy which takes an integrated and multi-sectoral approach to environmental management, mandates environmental impact assessment, promotes the ratification/implementation of multilateral environmental agreements, links the economic/trade regimes to environmental protection and codifies internationally agreed concepts/principles;
- Identify new concepts/principles deemed significant for the future of environmental law;
- Encourage international cooperation in environmental emergencies, transboundary pollution and shared natural resources;

Involved agencies and organizations in the above programmatic thrust include: FAO, ICAO, IAEA, ILO, IMO, UNCPCJD, UNCTAD, UNDP, UNEP, UNIDO, UNITAR, UN/OLA, UNU, World Bank, WTO, UN Regional Commissions, the Convention Secretariats as well as the Regional Development Banks and regional/country offices of UN bodies.

3.3 Management

Enhancement of States' capacity to participate effectively in the development and implementation of environmental law;

- Improve accessibility to environmental law information and strengthening public participation;
- Promote environmental law awareness and education; and
- Improve the effectiveness of environmental law through the use of implementation or compliance mechanisms (e.g., reporting/review procedures, monitoring schemes and bodies, economic incentives or disincentives, trade measures, dispute avoidance/settlement provisions, liability/compensation schemes and intellectual property rights).

Involved agencies and organizations in the above programmatic thrust include: FAO, IAEA, ILO, IMO, UNCPCJD, UNCTAD, UNDP, UNEP, UNIDO, UNITAR, UN/OLA, WTO, the Convention Secretariats, the World Bank and UNU as well as the regional development banks, regional economic/social commissions and regional/country offices of UN bodies.

4. Emerging Issues

New environmental law concerns which are attracting UN system attention include:

- identification and codification of concrete means for achieving sustainable development;
- building of national capacity to monitor/ensure compliance with environmental legislation;
- means to improve the effectiveness of international environmental agreements;
- harmonization and complementarity of international environmental and trade regimes;
- implementation of an integrated approach to resource management and pollution prevention;
- promotion of regional or subregional cooperation in the use of shared natural resources;
- application of environmental norms by military establishments;
- decentralizing environmental management, particularly by increasing local community involvement and improving access to environmental justice;
- the inter-relationship of environmental law with land tenure and land use systems;
- anticipated global protocols on the emission of greenhouse gases and biotechnology as well as possible legal instruments related to persistent organic pollutants, freshwater resources and environmental emergencies; and
- better administrative and substantive coordination of environmental conventions.

4. EDUCATION AND PUBLIC AWARENESS

1. Introduction

Education and public awareness are absolutely fundamental for achieving sustainable development - a fact recognized by Agenda 21 in almost all its chapters. The global community is facing the need to make changes that touch the very core of its value systems, involving shifts in attitude and perspective, in the way individuals and communities view themselves in relation to the environment, in the way they utilize and allocate resources and in the structures and processes of our systems of governance. None of these changes will be accomplished unless the entire undertaking is approached as an enterprise of learning and enhancement of public awareness. The central task in this enterprise is to assist decision makers and planners to cultivate a new mindset with the goal of incorporating the imperatives of sustainable development into the decision-making process.

Clearly, efforts to fully capitalize on the abundant human resources and capabilities available within the private sector and also within community organizations and non-formal groups have to be made. These cover a wide range from religious organizations to environmental groups, community interest groups and political movements.

Individuals and nongovernment organizations have to be encouraged to utilize their enormous capacity - as well as their responsibility - for influencing change and promoting stewardship and sustainability through lifestyle choices, political pressure, private investment decisions and consumer buying power.

One of the most difficult challenges will be to remit the capability for decision making into the hands of those most affected. As an integral part of this enterprise, a revised decision making process would utilize a participatory and consultative approach, incorporating respect for the needs and capabilities of constituents, improved feedback mechanisms and a flexible long term perspective on complex problems.

Another essential aspect of the learning enterprise is the validation, preservation and incorporation into the decision-making process of indigenous modes of knowledge. There is also a need for an institutional framework to service the enterprise of learning, enhancing public awareness, skills exchange and training.

Environmental education through global environmental citizenship and public awareness in this sense will fundamentally be exercised in human resource development and the maximization of human potential. The enterprise begins with a personal re-examination of values, but it must progress into an investment, on the part of society, in the development of new skills and knowledge; the training of policy makers and trainers and most importantly the enhancement of communications and access to information across all barriers.

Information edge is an important multiplier of environmental actions envisaged by the UN system. For UN the information advantage can strengthen the intellectual link between its policies to enhance environmental awareness and its linkages with different UN bodies as the authoritative voice for the environment.

2. Objectives

The overall objective is to achieve environmental literacy and ethical responsibility through environmental education and information on a world-wide scale by the year 2005, as the requirement for a global environmental citizenry. More specifically they have the following goals:

- strengthening the role of environmental education, training and information in society in its widest sense;
- reorienting formal education towards environment;
- improving the communication of public environmental information and its impact;
- facilitating access to environmental information, especially in the developing countries;
- improving environmental education of women;

- strengthening community participation and partnership;
- further developing media services-the primary source of information on the environment;
- improving the quality and quantity of reporting, make it more target oriented.

* Longer-term: to be better able to anticipate and prevent problems and reduce risks;

* multisectoral: to include an understanding of the entire range of the functions of the environment in which they live.

* wider: to understand the impact of their actions on other sectors, regions and communities and to recognize that the causes and consequences of the problems they seek to solve may involve others and other institutions.

Although basic formal and non-formal environmental education is a priority goal, comprehensive policies must still include improved higher education, access to scientific research and technology and professional environmental training.

The task manager under IACSD for the relevant chapter of Agenda 21 is:
- Chapter 36: "Promoting education, public awareness and training" - **UNESCO.**

3. Programmatic Thrusts

3.1 Assessment

- Assess the development of Global Environmental Citizenship principles and their introduction in developed and developing countries and countries with economies in transition.
- Assess the specific regional requirements for Environmental Citizenship programme.
- Assess a need for new patterns of behavior and ethical responsibilities of individuals, major groups, NGOs and society as a whole towards the environment.
- Assess the needs of particular major groups, including consumers, parliamentarians, youth, women, religious groups, for environmental information and education.
- Assess the role of various mechanisms utilized to disseminate the environmental information and raise public awareness.
- Assess the development of the environmental education.

Involved agencies and organizations in the above programmatic thrust include ILO, UNICEF, UNEP, UNESCO, UN Regional Commissions, UN NGLS.

3.2 Policy

- Catalyze and promote cooperation within the UN system on raising public awareness, environmental education and information.
- Promote regional cooperation in implementation of both UN programmes and joint activities with other partners.

- Support and encourage strategic partners who can shape opinion in favour of sustainable production and consumption patterns. Categories of partners include consumer groups, parliamentary associations, religious and spiritual groups and non-governmental organizations.

- Facilitate development and implementation of "Global Environmental Citizenship" initiative as a basis for individual and community action for sustainable development. Its central purpose is to extend the duties associated with active citizenship to include responsibilities for the environment.

- Refocus the environmental education in order to develop programs for empowering individuals, create local arenas for them to act in, and educate them into willing acknowledgement of the duties involved in the practice of citizenship in the service of the environment. This process should be built on past experiences, in particular that of UNESCO/UNEP's IEEP.

- Promote development of networks on education and training for environment and sustainable development at all levels, particularly at grass-roots level.

- Facilitate development of Global Environmental Citizenship strategy.

- Ensure that guidelines and check-lists on gender and the environment are implemented evenly in programme conception, design and implementation.

- Follow up the broad framework articulated in the Beijing Platform for Action with concrete actions which recognize women's stake in the management of natural resources and environmental governance in general. To this end there is a need to develop an ambitious programme building on the compilation of women's success stories collated for UNCED and the consultations that preceded the Forth World Conference on Women.

- Target the tier of government closest to people, namely local authorities. Local Agenda 21 partnerships have the potential of re-orienting the planning and provision of services to take environmental considerations into account.

- Promote and implement recommendations on education, public awareness and training contained in action plans of all major UN conferences, conventions and agreements adopted after UNCED.

Involved agencies and organizations in the above programmatic thrust include ILO, UNEP, UNESCO, IUCN.

3.3 Management

- Facilitate development of curricula and support materials for the environmental education in developing countries and countries with economies in transition.

- Organize a series of Global/Regional Youth and Children Fora on the environment to inculcate among young people and children a concern for the preservation of the earth and a capacity for taking actions beneficial to the environment.

- Facilitate production of print, audio visual and other information and educational materials.

- Support and develop media activities and training of journalists.

- Facilitate professional training and training within the major groups, for NGOs and public at large.

- Promote the international environmental campaigns and the major annual UN events e.g. the World Environment Day, Clean Up the World, Ozone Day, Oceans Day, Desertification Day, Biodiversity Day.

- Organize international touring exhibits, competitions in order to raise environmental awareness.

Involved agencies and organizations in the above programmatic thrust include: DPI, ILO, UNEP, UNESCO, UNHCR, UNICEF, WHO, WMO, UN NGLS.

4. Emerging Issues

An explosion in civic environmental activities could be expected as a long term result of the major UN Conferences held earlier in the 90s.

The role of NGOs in solving the global environmental problems will continue to increase and the UN system will have to improve cooperation with major groups, NGOs and the general public.

Two conceptual problems prevent UN bodies from realizing their potential. The first is the thinking that clouds the appreciation of information as power. The second conceptual problem has been a failure to grasp the nature of information. It is easy to trace and forecast the growth of capabilities to process and exchange information. The information revolution clearly in its formative stages, but one can foresee that the next step will involve the convergence of key technologies, such as digitization, computers, telephones, and televisions. But to capture the implications of growing information capabilities, particularly the interactions among them is far more difficult. Information power is also hard to categorize because it cuts across all other economic, social and political power resources, in some cases diminishing their strength, in others multiplying it.

Our information policy strategies should be adjusted to reflect this change. Some of the lingering inhibitions on sharing information should go. Some of the adjustments will require innovations. Information agencies should be instruments that can be more powerful, cost effective, and flexible than ever before.

The gap between the levels of access to information by rich and poor still remain and may be even widen.

There is a number of requirements for disseminating environmental information to the public. Basic information on the scientific, technical and socio-economic aspects of environmental issues must be collated. Target audiences must be identified and their profiles accurately defined. The information must be structured and presented in appropriate language and graphic supplements for the greatest possible impact on the particular group. Because of the competition for the attention of readers, listeners and viewers, each of the foregoing steps must be taken with the greatest professional skills.

There is, however, an increasing recognition that while conventional mass media-dominated and information-driven approaches to enhance public awareness have a role to play, these are in themselves insufficient. Despite the efforts made over many years to inform and educate public opinion, public understanding of the environmental issues appears to stem from reasons other than a real appreciation of the more fundamental issues at stake or understanding of the underlying causes of environmental degradation.

Annex

ABBREVIATIONS

ACC/ISCC	Administrative Committee on Coordination/International Systems Coordinating Committee
ASEAN	Association of South East Asian Nations
CBD	Convention on Biological Diversity
CIEL	Centre for International Environmental Law
DDSMS	Department of Development Support and Management Services
DPCSD	Department for Policy Coordination and Sustainable Development
DPI	Department of Public Information
ECE	Economic Commission for Europe
ENRIN	Environment and Natural Resource Information Networks
EPAA	Environment Protection Agency of Australia
EEP	Environmental Effects Panel
FAO	Food and Agricultural Organization
FIELD	Foundation for International Environment Law & Development
GEF	Global Environment Facility
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Pollution
IAEA	International Atomic Energy Agency
IAIA	International Association for Impact Assessment
IGBP	International Geosphere-Biosphere Programme
ICLEI	International Council for Local Environmental Initiatives
ICSU	International Council of Scientific Unions
IDRC	International Development Research Centre
IEA	International Energy Agency
IFAD	International Fund for Agricultural Development
IFCS	Intergovernmental Forum on Chemical Safety
IICA	Instituto Interamericano de Ciencias Agricolas
ILO	International Labour Organization
IMO	International Maritime Organization
INFOTERRA	International Referral System for sources of environmental information
INSTRAW	International Research and Training Institute for the Advancement of Women
IOMC	Inter-Organization Programme for Sound Management of Chemicals
IPCS	International Programme on Chemical Safety
IPF	Intergovernmental Panel on Forests
ITTO	International Tropical Timber Organization
ITU	International Telecommunications Union
IUCN	The World Conservation Union
IUFRO	International Union of Forestry Research Organization
IULA	International Union of Local Authorities
NASA	National Aeronautics and Space Administration
OECD	Organization for Economic Co-operation and Development
PASU	Pan African Scientific Union
PEEM	Panel of Experts on Environmental Management
SAP	Scientific Assessment Panels
TEAP	Technical and Economic Assessment Panel
UN/OLA	United Nations Office for Legal Affairs
UN NGLS	United Nations Non-Governmental Liaison Service
UNCHS	United Nations Centre for Human Settlements
UNCPCJD	United Nations Crime Prevention and Criminal Justice Division
UNCTAD	United Nations Conference on Trade and Development
UNDCP	United Nations Drug Control Programme
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO/IOC	United Nations Educational, Scientific and Cultural Organization/ Intergovernmental Oceanographic Commission

UNFPA	United Nations Fund for Population Activities
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNITAR	United Nations Institute for Training and Research
UNRISD	United Nations Research Institute for Social Development
UNSO	United Nations Sudano/Sahelian Office
UNU	United Nations University
UNV	United Nations Volunteers
UPOV	International Union for the Protection of New Varieties of Plants
USEPA	United States Environment Protection Agency
WCMC	World Concervation Monitoring Centre
WFP	World Food Programme
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization
WRI	World Resources Institute
WTO	World Tourism Organization
WWF	World Wildlife Fund